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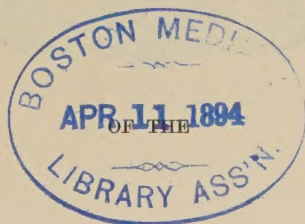
SEVENTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

AND

VITAL STATISTICS



COMMONWEALTH OF PENNSYLVANIA.

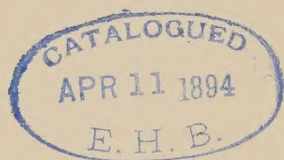
Transmitted to the Governor, December 7, 1891.

HARRISBURG:

EDWIN K. MEYERS, STATE PRINTER.

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RESOLUTION OF THE BOARD RELATIVE TO PAPERS PUBLISHED
IN ITS ANNUAL REPORT, PASSED JULY 2, 1885.

Resolved, That no papers shall be published in the annual report of this Board except such as are approved for the purposes of such publication by a majority of the members of the Board, and that any such paper shall be published over the signature of the writer, who shall be considered as entitled to the credit of its production, as well as responsible for the statement of facts reported and the opinions expressed therein.



COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH,
EXECUTIVE OFFICE, 1532 PINE STREET,
PHILADELPHIA, *December 7, 1891.*

To His Excellency, ROBERT E. PATTISON, *Governor* :

SIR: In compliance with the provisions of section ten of the act to establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth, approved June 3, 1885, I have the honor to transmit the Seventh Annual Report of the Board for the year ending November 13, 1891.

BENJAMIN LEE,
Secretary.



STATE BOARD OF HEALTH

AND

VITAL STATISTICS

OF THE

COMMONWEALTH OF PENNSYLVANIA.

1891.

OFFICERS AND MEMBERS.

PRESIDENT.

JAMES H. McCLELLAND, M. D., of Pittsburgh.

SECRETARY.

BENJAMIN LEE, M. D., of Philadelphia.

MEMBERS.

PEMBERTON DUDLEY, M. D., 1338 North Fifteenth street, Philadelphia.
JOSEPH F. EDWARDS, M. D., cor. Sixteenth and Chestnut streets, Philadelphia.
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HOWARD MURPHY, C. E., 326 Walnut street, Philadelphia.
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HON. SAMUEL T. DAVIS, M. D., 134 North Prince street, Lancaster.
BENJAMIN LEE, M. D., 1532 Pine street, Philadelphia.

BUREAU OF REGISTRATION OF VITAL STATISTICS,
Department of Internal Affairs, State Capitol, Harrisburg.

STATE SUPERINTENDENT OF REGISTRATION OF VITAL STATISTICS,
BENJAMIN LEE, M. D.



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PART I.

REPORT AND MINUTES.



SEVENTH ANNUAL REPORT OF THE SECRETARY.

Dr. J. H. McCLELLAND, *President of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania:*

SIR: In offering this, his Seventh Annual Report, it is your secretary's pleasing duty to congratulate the Board on the fact that its numbers continue unbroken. The reappointment of Dr J. F. Edwards, and the appointment of the Hon. Samuel T. Davis, M. D., by his Excellency Governor Beaver, were confirmed by the Senate early in the recent regular session of the legislature, and Drs. G. G. Groff and Pemberton Dudley, having been reappointed by his Excellency Governor Pattison, on the expiration of their terms of office in June of the present year, presented their commissions and took their seats at the July meeting.

CHANGES IN MEDICAL INSPECTORSHIPS.

The Board has not been so fortunate, however, as regards its medical inspectors. Dr. James L. Stewart, of Erie, medical inspector of the lake district, embracing the counties of Erie, Crawford, Warren, Mercer, Venango and Forest, closed his long and useful career soon after the beginning of the new year. As the leading practitioner of his section of the state, and a former president of the state medical society, he commanded the respect of his medical peers, as well as of the public generally, and made the influence of the Board strongly felt in his large and important district. Dr. A. A. Woods, of Erie, the successor of our lamented president, Dr. Germer, in the position of health officer of that city, and the associate of Dr. Stewart in much of his work as an inspector, fills the place left vacant by that officer's death. Dr. C. L. Gummert, of Brownsville, medical inspector of the Southern Tier District, including the counties of Fulton, Bedford, Somerset and Fayette, died early in the summer. He was one of the many unfortunates, and probably one of the first, who hastened to Berlin on the premature announcement of the discovery of Prof. Koch of the cure of tuberculosis by inoculation, in order to make trial of it in his own case. He returned to his home apparently improved and much encouraged, but his hopes proved illusory, and he soon sank under renewed inroads of the disease. He was an intelligent and energetic officer, and had enjoyed the advantages of military service under the United States government.

His place has been filled by the appointment of Dr. J. S. Hackney, of Uniontown, president of the Fayette County Medical Society, who has already given proof of the wisdom of his selection.

MEETINGS.

During the year eight meetings—four times the number required by law—have been held, three regular, including the present, and five special. They were in order as follows: Special meetings, December 22, 1890, March 5 and May 1, 1891; regular meetings May 14 and July 9, 1891; special meetings August 31 and October 24, 1891, and a regular meeting November 12, 1891.

SANITARY LEGISLATION.

The committee on sanitary legislation looked forward to the session of the state legislature during the present year with much hopefulness as an opportunity for obtaining statutory enactments which would place the work of the Board on a firmer basis, confirm its powers, and extend its usefulness by increasing its pecuniary means. Especially did it feel encouraged by the strong recommendations of his Excellency Governor Beaver, in his message at the opening of that body, in favor of such legislation, and still stronger arguments which he used in support of them. The following extracts from that document will indicate the grounds on which they based their expectations:

EXTRACTS FROM GOVERNOR BEAVER'S MESSAGE TO THE LEGISLATURE, JANUARY 5, 1891.

"Soon after the adjournment of the preceding legislature, to wit, on the 31st of May, 1889, the commonwealth was visited by a calamity which has no parallel in its history. Throughout the mountain region of the central part of the state a rain storm of unprecedented duration and severity prevailed, which so increased the volume of water that the ordinary channels of drainage were unable to carry it away. The result was wide-spread desolation and ruin, extending over some twenty of the sixty-seven counties in the commonwealth. Thousands of lives were lost, and property, municipal, corporate and individual, aggregating many millions of dollars, was destroyed.

"The people inhabiting the regions drained by the west branch of the Susquehanna, the Juniata and the Conemaugh rivers, were the principal sufferers. Many villages, towns and cities on the eastern slope of the Alleghenies were, for the time being, rendered utterly helpless, and their people prevented from pursuing their usual vocations. In addition to the loss of life and property sustained, the public health was greatly endangered, and municipal officers deprived of the power to exercise their authority, or to furnish the means by which the situation could be relieved.

"On the western slope of the mountains, Johnstown and its neighbor-

ing boroughs were almost obliterated. In some cases the officers of municipalities were lost; whole communities were swept away: streets and other boundaries utterly obliterated, and municipal government generally broken up. The people were for a time thoroughly helpless. Food and clothing were furnished by those who were charitably disposed, and a relief committee from the neighboring city of Pittsburgh commenced the work of removing the *débris* which had collected at the confluence of the Conemaugh and Stony Creek, so as to relieve those who remained of the danger of pestilence which seriously threatened them. The State Board of Health was early upon the ground and took immediate and energetic steps toward the preservation of the public health.

"On the 8th of June, after issuing a formal proclamation to the people of the world, appealing for their charitable help for the distressed within our commonwealth, and arranging for the receipt and careful account of the charity which was sure to follow the appeal, I made a personal visit to Johnstown and a thorough inspection of all its surroundings. The Pittsburgh relief committee was practically in charge of the distribution of charitable relief, of the burial of the dead and the abatement of nuisances which seriously threatened and affected the public health. Although the State Board of Health, under the provisions of the sixth section of the act of the 3d of June, 1885, had power and authority 'in cities, boroughs, districts and places having no local board of health, or in case the sanitary laws or regulations of any place where boards of health or health officers existed should be inoperative, to order nuisances, or the cause of any special disease or mortality to be abated or removed, and to enforce quarantine regulations as said Board of Health shall direct,' and the power thus conferred seemed to be absolute and unlimited, yet no appropriation having been made by the legislature in view of such an overwhelming calamity, and no sufficient funds being available for enforcing the authority conferred by said act, it was practically helpless. The authorities of the Pittsburgh relief committee, however, recognizing the fact that the state was bound to abate these nuisances, which not only threatened the health of the entire community, but absolutely blotted out municipal authority, and in some cases municipal existence, demanded that work should be undertaken at once by the State Board of Health.

"It was urged that it would require at least three millions of dollars to clear the valley of these threatening nuisances, and that in order to provide the funds for this purpose the legislature should be immediately assembled in special session. A careful examination of the district convinced me that the amount required to discharge the duty which the state owed to the community was greatly exaggerated, and that the work could be done for about what it would cost to assemble the legislature in special session and secure the necessary legislation therefor.

The work was of immediate and pressing importance. The flood had so interfered with telegraphic and railway communication that it was not then possible to reach some parts of Pennsylvania, and the legislature could not have been assembled in time to afford the needed relief, even if it had been deemed desirable to provide for it in this manner.

"Upon the representation of the State Board of Health that nuisances prejudicial to the health and safety of the people existed in various parts of the state, proclamations were issued requiring them to be abated at the expense of the commonwealth. In a personal consultation with members of the Pittsburgh relief committee and of citizens of Johnstown, I agreed that the state would take charge of the strictly sanitary work at Johnstown, on Wednesday, the 12th day of June, 1889, and in order to carry out this agreement authorized the State Board of Health to take charge of the work and to employ such means as were necessary to carry it into effect. The Adjutant General of the State, who was upon the ground, was authorized to co-operate with the State Board of Health as my immediate representative.

"The necessity for and the work done by the State Board of Health throughout a large portion of the commonwealth for many months succeeding the floods of 1889, demonstrates the necessity for the existence of the Board and the wisdom of enlarging its power. The waterways of the commonwealth are becoming more and more the source of water supply to all our cities and larger towns. The purity of the water therein becomes, therefore, a question of vital importance. The investigations of the Board of Health prove conclusively that in many cases of epidemic diseases prevention is easy if the water supply can be controlled and purified. The time has come when the legislature should take decided grounds and prompt action upon this subject.

"It may become necessary to revolutionize our entire system of sewerage for cities, towns and public institutions. Instead of emptying this mass of corruption into our streams, carrying disease and death to those who depend upon them for their water supply, it will be necessary to devise and carry into execution some efficient system of disposing of the sewerage of dense communities. I recommend that the authority of the State Board of Health over such subjects be increased, with such safeguards as may be necessary, and that the appropriation for their general expenses be so increased as to enable them to make careful and thorough investigation and experiment as to the best means of avoiding the dangers herein recited, and at the same time affording an efficient and healthful system of sewerage."

PROTECTION OF WATER SUPPLIES.

The efforts of the secretary and the committee were first in the direction indicated by the Governor, namely to procure legislation for the protection of the purity of streams and other inland waters, more par-

ticularly of such as are, or are likely to become, the sources of water supplies for cities and towns. In this attempt they had the support of the water companies and water commissioners of the western part of the state who met in convention in Pittsburgh and adopted resolutions in favor of such an enactment, and were aided by the public press of that city. They also sent a delegation to Harrisburg to meet the Board and unite with it in a personal appeal to the legislature.

The committee on public health and sanitation of both branches of the legislature became strongly impressed with the necessity for this step, and that of the House of Representative extended to the Board the courtesy of the use of the hall of the House on the evening of March 5th, 1891, and invited the entire legislative body to hear the arguments of the friends of the measure. The attendance was large and the impression made was evidently favorable. The meeting was presided over by the Hon. Henry F. Walton, of Philadelphia, a member of the House committee on public health and sanitation. Addresses were made by members of the Board, medical inspectors, water analysts and representatives of water companies, presenting the subject from every point of view in a forcible manner, and letters were read from municipal corporations showing the necessity for protection of the streams from which their people were drinking. If a vote could have been taken at the conclusion of the meeting it would have resulted in favor of the desired action by a large majority. The dread, however, of interfering with the manufacturing interests of the state finally prevailed in the minds of legislators, and the bill was defeated.

Two bills pertaining to this subject however passed, both of the nature of special legislation. One of these exemplifying the curious fact pointed out by your secretary in his last annual report that the legislature is willing to extend protection to the water supply of Philadelphia which it denies to that of other cities, forbids the establishment of cemeteries on lands located within one mile of any city of the first-class, the drainage from which empties or passes into any stream from which any portion of the water supply of such city is taken. The other is an act to prevent the pollution of springs, water-wells and streams by water escaping from abandoned oil wells and gas wells. This also is of extremely limited application.

POLLUTION OF THE WATER SUPPLY OF A NEIGHBORING STATE.

The necessity for a general statutory law of this kind has been emphasized since the adjournment of the legislature, by the receipt of a remonstrance from the State Board of Health of Delaware, by the secretary, to the effect that the Brandywine river, which is the source of water supply for the city of Wilmington with its population of sixty thousand souls, was receiving pollution of a very serious character, about eight miles from the in-take of the city water works, at a point within the

boundaries of Pennsylvania. While Delaware has herself an excellent law to prevent the pollution of her streams she is powerless protect her citizens because the great and progressive State of Pennsylvania is without such a law. The Board at once interfered in this case and caused the abatement of the nuisance; but the incident suffices to show that the question is one of wider import than a mere state issue. The Board, therefore, having labored in vain with the successive legislatures, finding itself no nearer the goal of success than when it began, has appointed a committee to consider the expediency of applying to congress for the enactment of

A NATIONAL LAW TO PREVENT THE POLLUTION OF STREAMS PASSING FROM ONE STATE TO ANOTHER.

The national conference of state boards of health which meets next summer in Detroit will lend its powerful influence in the same direction. It is therefore quite within the limits of probability that before the state legislature has another opportunity to vindicate its intelligence in this regard, congress will have passed a law which will, for certain of its waters at least, render its action unnecessary.

PURIFICATION OF SEWAGE.

In this connection the secretary would call attention to the fact that new methods of purification of sewage are at present on trial at two points in the state, that of the Devon Inn, Chester county, and of the village of Wayne, Delaware-county. Up to the present time the Board has not been able to pronounce either of them satisfactory. The issue of the report of the State Board of Health of Massachusetts on "Filtration of Sewage and of Water and Chemical Precipitation of Sewage," constituting a volume of 900 pages, marks a new era in the discussion of this question. It is based on experiments on a large scale at the board's experiment station at the city of Lawrence, and on analyses and microscopic examinations made at the board's chemical and biological laboratories. These observations have been actively carried on since the year 1887, and have been conducted at an expense of \$107,076.16. To attempt to give the slightest idea of their scope and completeness in this report would be out of the question. Suffice it to say that they point to the solution of this troublesome problem, in the adoption of a system of intermittent filtration, through filter beds so constructed that the air shall have free access to the fluid as it passes through them, and to the fact that success depends on the abilities to cultivate the bacteria of nitrification in the filters. So that the fact to which so much prominence has been given that germs or bacteria have been discovered in large numbers in the filtering medium of many household filters does not condemn the latter, unless it can be shown that these bacteria are those of disease.

The other measure of reform which the board urged upon the atten-

tion of the assembly was, the establishment of local boards of health throughout the state, in cities, boroughs and townships.

This is not only demanded most urgently in the interests of health, but is an essential preliminary to the inauguration of any complete system of registration and vital statistics. It is a fact of which a citizen of Philadelphia can scarcely feel proud, that a man may die and be put under the ground, any where outside of the largest cities, and it shall be less a matter of record than if he were a stallion or a bull with a pedigree. Can we wonder that graveyard insurance flourishes on such a soil? To show how this carelessness in burial impresses the ordinary mind, allow me to call your attention to the following extracts from a letter by the wife of a journeyman carpenter who had applied to the State Board of Health for information with regard to the place and date of birth of a deceased person :

“PHILADELPHIA, *February 9, 1891.*

“BENJAMIN LEE, M. D. :

“DEAR SIR: Your letter of 9th instant before me. The statement you present me with regarding the State Bureau of Vital Statistics is so strange and astounding that I can scarcely realize such a condition of affairs in a large and thickly populated state like Pennsylvania. It is, in my opinion, a sad disgrace to the state. And even our large and beautiful city, I am informed, has no records of births or marriages prior to July, 1860. Is it not a deplorable condition for a city and state like ours? It is high time our city and state authorities should awaken to home interests, and dust the cobwebs from their eyes, and drive the lethargy from their brains. If some of the funds spent to entertain and amuse titled foreigners were appropriated for such useful and necessary bodies as the board of health and board of vital statistics, our fair state and city would not be the laughing stock and butt of every little town and country village outside of the state. But pardon me, I am entirely forgetting myself, and I beg you will excuse my astonishment at such a vile state of affairs, which is the only excuse I can offer for my tiresome letter. If possible to obtain me the information I request, I shall be very much obliged indeed. More, were I of the moneyed class, I would willingly pay for the trouble, but I am not, as my husband is a working carpenter, and in poor health at that, *i. e.*, heart disease and rheumatism from the army.

“Respectfully,”

The original bill for this object meeting with serious opposition, it was modified in various ways in order to meet the view of objectors, but concessions were of no avail and the measure failed.

Your secretary is not willing to adopt the sentiment expressed by so many of the opponents of this bill in the legislature, that the citizens of Pennsylvania living outside of the large towns are so far inferior in intelligence and civilization to those of other states as to be incapable of

self-government in this important particular, and he trusts that you will share in his reluctance. With your approval, he proposes to importune the legislature at each successive session until he convinces it of the error of this belief and obtains the desired enactment.

The act and joint resolution passed with reference to the immense expenditures incurred in abating the colossal nuisance at Johnstown are of deep interest to the Board, first, as justifying the action of your secretary in immediately assuming control, in the name of the Board, in the devastated regions; secondly, in legalizing the action of the Governor in resorting to extra-constitutional means to obtain funds to answer the demands made upon him by the Board, and endorsing the expenditure by the secretary of amounts enormously in excess of the limit allowed by law, in view of the exceptional enormity of the disaster, and thirdly, as affording the Board a firm basis for action in the future when confronted suddenly by emergencies of unusual magnitude. It is also a matter of congratulation that the bill made substantial recognition of the efficient services of two members of the Board in the work of sanitary relief.

As regards the provision for carrying on the manifold work of the Board, the appropriation was increased from \$5,000 to \$6,000 annually. This increase, while far from meeting the requirements of the case, is yet encouraging as showing that the Board has the confidence of the law-makers, and that they are disposed cautiously to enlarge its means of active usefulness.

On the whole, then, in reviewing the sanitary work of the last legislature there is reason to feel that a certain advance has been made, and to anticipate that the next will more fully adopt the recommendation of Governor Beaver to increase both the authority of the Board and the appropriation for its general expenses.

EPIDEMICS—SMALL-POX AT JOHNSONBURG.

The only outbreak of contagious disease which has caused your secretary serious anxiety during the past year has been one case of small-pox at Clarion Junction, near Johnsonburg, Elk county. On the evening of February 2, 1891, the following telegram was received:

“DR. BENJAMIN LEE, *Secretary State Board of Health, Philadelphia*:

Bad case of confluent varioloid. Many expected. Come, send or advise at once.

W. R. PALMER.”

The secretary at once telegraphed Dr. Spencer M. Free, medical inspector of the western slope district, to visit, inspect, and if necessary, quarantine. Early the following morning Dr. Free was on the ground, verified Dr. Palmer's diagnosis and declared quarantine in the name of

the Board. At the same time a telegram was sent to Dr. H. M. Alexander of the Marietta vaccine establishment, ordering virus to be sent to Dr. Free.

The hamlet in which the first case occurred, consisted of six or eight small frame houses, grouped closely together, and distant from Johnsonburg about two miles. Exposure of many individuals in this settlement having taken place, Dr. Free decided to include the whole in his quarantine lines, and to make it the quarantine station and hospital in the event of other cases occurring in Johnsonburg.

One case, exposed to the first before the nature of the disease was discovered, did so occur and was promptly removed. On the day of his arrival the inspector called a meeting of prominent citizens, Johnsonburg not being an incorporated borough, at which a sanitary fund was started and sanitary and quarantine committees appointed. The following circular was authorized and promptly issued:

Notice.

To the Citizens of Johnsonburg and Vicinity:

Small-pox has broken out at Clarion Junction. At present there is but one case. There is no occasion for needless alarm, but you should use every means in your power to prevent its spreading. Keep away from that neighborhood, clean up your cellars, yards, water closets, stables, etc., sprinkle chloride of lime freely in and about your premises.

Have every member of your family vaccinated. Free vaccination will be furnished. The State Board of Health, in conjunction with the committee of citizens has established strict quarantine, and will do all in their power to stamp out the disease.

We request your hearty co-operation in these sanitary matters, but in case of failure to comply, the committee has full authority to compel the work to be done.

BENJAMIN LEE, M. D.,

Secretary State Board of Health.

S. M. FREE, M. D., *Inspector.*

Committee on Sanitation.—M. J. Maxwell, Samuel Lowrey, James McCloskey, W. W. Gore.

Committee on Quarantine.—John Bryan, W. I. Secrist, E. F. Cummings.

Guards were established night and day, and absolute non-intercourse maintained. Two thousand vaccine points were sent to Dr. Free, and considerably more than that number of vaccinations were performed by himself and Drs. Murphy and Palmer of Johnsonburg, who gave up their private business in order to aid in the protection of the public

health. Drs. Wright and Geisinger of the Philadelphia and Erie railroad, and Dr. Frank Earley of Ridgway also rendered valuable aid. On February 13th, the secretary visited Johnsonburg, held a consultation with Dr. Free and the medical inspectors of the Allegheny and Lake Erie districts, Drs. Thompson and Woods, and the officials of two of the railroads entering at this place, with reference to the maintenance of the quarantine, provision for sick employés, and the establishment of railroad quarantine should the disease become epidemic in Johnsonburg. The secretary also addressed a citizens' meeting, supporting Dr. Free's measures, and commending the spirit of ready compliance with the orders of the board and of self-help displayed in meeting the emergency.

The fact that railroads radiated in four directions from this center made it a matter of great importance to keep the infection hedged in, and the fact that at least twenty families had been exposed, made it one of no little difficulty and requiring the most constant vigilance. The difficulty of obtaining nurses and a physician for the unfortunates thus shut up was very great, especially as the Board was unable to promise or assign the amount of payment for such services. This brought into prominent relief the importance of the establishment of a state emergency fund, to be placed at the disposal of the Governor, and drawn upon by the Board with his approval in order to enable the secretary to take prompt action in such cases. The secretary drew up a bill for that purpose which was introduced in the Senate by Senator Hall, but failed to pass. The difficulty with regard to a quarantine physician was solved by the generous offer of Dr. Murphy to remain within the lines. The number of cases was eleven, and of which six were small-pox and five varioloid, and the number of deaths four. The dead were buried in the mountain side directly behind the cottages and inside the line. Thorough disinfection was practiced after death or convalescence before the quarantine was raised. The threatening epidemic was cut short there and then, no case having occurred elsewhere attributable to it, and Medical Inspector Free received a formal vote of thanks from the Board for the energy and good judgment displayed in his management of the affair. To indicate briefly what the state owes to him and to the Board for their successful intervention in this case, we have but to revert for a moment to the epidemic now in progress in the Province of Quebec, where the escape of a single wilful girl from a hospital where she was detained for observation, and her presence on public conveyances, has led to the development of 110 cases with twenty-one deaths, and the establishment of eleven distinct centers of infection, covering an area of six counties, and the disease is still rapidly spreading.

The local health authorities of Philadelphia, Erie and Scranton have, by the exercise of a like promptness, and firmness cut short outbreaks of this disease in their own cities during the year.

The cases in Erie and Scranton were directly traceable to the receipt

of letters from Texas, where the disease was epidemic, thus clearly showing the necessity for disinfection of the mails under such circumstances.

The outbreak in Philadelphia was the result of the presence of an infected steamship in the port, the disease having escaped the observation of the port physician, in consequence of the eruption being masked by that of another disease. After leaving this port several other cases developed on the vessel, and the affair became the subject of correspondence between the Surgeon General of the United States Marine Hospital Service and your secretary. The incident only emphasizes the correctness of the opinion already expressed by your secretary that the city of Philadelphia is running an unwarrantable risk in dispensing with the protection of a quarantine station during six months of each year. It may not be inappropriate to allude in this connection to the appointment of a

QUARANTINE COMMISSION

by the recent legislature. In his third annual report to the Board, in 1887, the secretary recommended that the Board urge upon his Excellency the Governor of the Commonwealth, the importance of conferring with the chief executives of the neighboring States of Delaware and New Jersey and the United States government with a view to the establishment of a thoroughly equipped quarantine station at some point farther down the river or bay than the present station at Tinicum island. By resolution of the Board, such a recommendation was forwarded to the Governor, but no action was taken upon it. At the instance of citizens residing in the immediate neighborhood of the present station the question was brought up before the last legislature and the following joint resolution was passed:

“IN THE SENATE, *May 13, 1891.*

“*Resolved* (if the House of Representatives concur), That the Governor be and is hereby authorized to appoint four persons who shall, with the Governor of the Commonwealth, constitute a board of commissioners, whose duty it shall be to communicate with the proper authorities of the Federal government, or of any state, with a view to obtaining such concessions as will enable the board of health of the city of Philadelphia, or the Commonwealth of Pennsylvania, to secure a suitable site for a quarantine station at some point remote from the centers of population, on the Delaware river. The commissioners shall also inquire into the feasibility of establishing a joint-quarantine for the protection of all the ports on the Delaware river and bay, to be controlled by the several states bordering thereon. The commissioners shall report to the next legislature and shall receive no compensation for their services, but shall be allowed their necessary and actual expenses for travelling, stationery

and clerk hire, provisions for which shall be made in the general appropriation bill."

The following-named persons were appointed members of this commission by the Governor: Henry Leffmann, Benjamin Lee, John Huggard and Andrew Osborne. The members met at Harrisburg July 1, 1891, on the call of the Governor, and organized by the election of Governor Pattison as chairman and Dr. Henry Leffmann as secretary. On the 7th of July, the commission visited and inspected the quarantine station at Tinicum, known as the Lazaretto, and on the 14th of October, made a voyage of inspection down the Delaware river and bay, as far as Reedy island, availing themselves of the courtesy of the Secretary of the United States Treasury, who, at the request of your secretary, placed the revenue cutter "Hamilton" at their disposal for the occasion. The engineer member of the Board, Mr. Murphy, and Medical Inspector Atkinson, of the Delaware district, were present by invitation.

DIPHTHERIA.

This disease has been unusually prevalent both in city and country during the past three months and has been of rather a malignant form. In one instance the secretary has considered it necessary to close the public schools. While the disease is undoubtedly maintained, fostered and intensified by the filthy conditions which prevail in most of our small towns, yet the principal reason of its wide-spread existence and its long continuance in neighborhoods is to be found in uninterrupted communication between the sick, the convalescent, the inhabitants of infected houses on the one hand, and the well and residents of uninfected houses on the other. When we succeed in establishing this fact in the minds of the people and in inducing them to adopt the precautions which it necessitates, we shall have rendered epidemics of diphtheria as rare as those of small-pox now are. In view of the extremely infectious character of this disease, and of the fact that there are numerous instances on record in which bodies dead of it have become centers of infection in districts previously free from it, even train hands having caught the contagion from a corpse in transit, the State Boards of Health of Iowa and Ohio have decided to forbid absolutely the transportation of the body of a person who has died of diphtheria. The secretary would suggest the adoption of a similar regulation by our Board.

TYPHOID FEVER,

on the contrary, is not spread by direct contact and infection. It is important that this fact should be as widely disseminated as the other. In an inspection made by the secretary within the last month a hapless individual who, with several members of his family, had recently suffered from this disease, complained that the neighbors were all so afraid that they would not come inside the house, and he and his family found it difficult to obtain the necessaries of life and nursing care. This belief

prevails quite widely, and is entirely unfounded. A well person may nurse a typhoid fever patient night and day with impunity, only taking the precaution not to eat or drink in the sick room and to drink no un-boiled water. A knowledge of this truth would save much suffering and privation in small communities. The disease has prevailed in the usual degree throughout the state, and a greater degree than usual in the neighborhood of Bethlehem and in the city of Philadelphia. The indications in both places point to a polluted water supply as the cause. The investigation of Medical Inspector McIntire into the conditions in and about Bethlehem was very complete, and his report is commended to the careful attention of the Board.

LEPROSY.

The want of proper provision for persons suffering from this most loathsome of all diseases, who are unfortunately now occasionally discovered in our country, and the dangerous nature of the disease enhanced by its long period of incubation often extending over years, makes it absolutely necessary that the United States Government should establish an asylum or colony where they may be cared for. The secretary has brought this subject to the notice of all the large bodies interested in questions of public health and has recently both personally and in correspondence communicated with the Surgeon General of the Marine Hospital Service in reference to it. The next report of that officer will, there is reason to hope, contain a recommendation to congress to take action on the matter. In the meantime, might it not be well for this Board to adopt a resolution expressing its sense of the expediency of such action? There are no doubt in every large city cases in hiding in which are slowly developing centers of infection, and which would gladly avail themselves of such a refuge were it open to them. Once in this country they cannot return to their native land, from the simple fact that no vessel will knowingly take them on board, and their treatment under the present regime is more than disgraceful, it is simply criminal.

CONFERENCES AND CONVENTIONS.

In accordance with his appointment, your secretary attended the meeting of the American Public Health Association at Charleston, S. C., December 16, 17, 18 and 19, 1890.

The subjects considered by the Association were as follows: Sanitary construction in house architecture, sewage disposal, maritime sanitation at ports of arrival, the prevention and restriction of tuberculosis, isolation in hospitals for infectious and contagious diseases, and establishments in favorable climates for persons having tuberculous predispositions. Among the important reports of committees

were those on the sanitation of foreign ships, and on diphtheria. An opportunity was afforded the members to visit the quarantine station of the port, and examine the new apparatus for the disinfection of goods, wearing apparel, etc., by means of superheated steam, and of vessels by bi-chloride solution and sulphur dioxide fumigation. A description of this apparatus, with illustrations, has been submitted to the Board, and it is suggested that it be reproduced in the annual report.

The National Conference of State Boards of Health held its seventh annual meeting at Washington, D. C., May 2 and 4, 1891. Your secretary had the honor of representing the Board at its sessions. The principal subjects discussed were those of "The requisites for a thorough system of quarantine and maritime sanitation," Interstate quarantine, disinfection of cargoes and vessels, measures for the prevention of the spread of consumption and the advantages of rivers conservancy commissions for the protection of streams against deforesting and pollution.

The section of state medicine of the American Medical Association, of which your secretary was the secretary, convened at Washington, D. C., May 5, 6 and 7, 1891. A large part of its deliberation was devoted to the important subject of school hygiene. The report of committee on meteorological conditions of the atmosphere and their relations to coincident prevalence of diseases, by the venerable founder of the association, Dr. N. S. Davis, was a paper of great value.

The following gentlemen were elected officers for the ensuing year:

Dr. Benjamin Lee, of Philadelphia, chairman.

Dr. Lawrence Flick, of Philadelphia, secretary.

The fifth state sanitary convention of Pennsylvania was held in Altoona, Friday and Saturday, May 15 and 16. The first session was devoted to papers bearing upon the subject of sanitary legislation, the second to those on general sanitation, and third to matters of local sanitation.

The Hon. John Dean, of Hollidaysburg, judge of the court of common pleas, presided over the deliberations, and delivered an interesting and instructive address on the powers and limitations of boroughs and municipal authorities in promoting the public health. Many valuable papers were read, and the discussions were all well sustained. The annual address was delivered by Dr. Samuel Dixon, professor of hygiene in the University of Pennsylvania. It was a masterly exposition of the latest views on the subject of the causation and prevention of tuberculosis, and advocated the enforcement of stringent precautionary measures to prevent the diffusion of the bacillus of this disease through the atmosphere or its introduction into the system in meat and milk. The secretary would suggest its separate publication in pamphlet form. The illustrated paper by Dr. M. L. Davis, president of the Lancaster County Medical Society, on "Garbage Cremation," describing a new

furnace for this purpose, was listened to with much interest. The effect of these conventions in calling attention to the sanitary problems presented by the special features of location, geological formation and so on of the places in which they are held, the means for their solution and the necessity for combined intelligent effort in order to carry out these measures is extremely beneficial.

The International Congress of Hygiene and Demography held its seventh annual meeting in London, August 10-17, 1891, under the patronage of the Queen and the Prince of Wales, both of whom take the deepest interest in matters pertaining to public hygiene. At the request of the secretary, Governor Pattison issued a commission to our president, Dr. J. H. McClelland, to represent the State of Pennsylvania at the congress. The latter was also supplied with appropriate credentials from this Board.

PRECAUTIONARY CIRCULARS.

The constantly increasing demand for the circulars of the Board plainly indicates that their value is appreciated by the people and that they are doing a good work. Other evidence of this recognition of the wisdom of this method of carrying out the duty prescribed by law of "disseminating information upon sanitary subjects among the people" is not wanting, as the following quotations from an editorial article in a paper published in the northern part of the state sufficiently demonstrates:

"Of all our state institutions there is none which arrived more directly at the practical way of accomplishing its allotted duties than the State Board of Health. Being composed of six eminent physicians and a civil engineer, it is but natural that practical methods should attend its work. What that work is, all know in part. Let an epidemic disease appear in any part of the state, and in a short time, almost immediately, the representatives of the Board are on hand, investigating into the origin of the trouble, suggesting practical methods for staying the progress of the epidemic or taking active and sweeping methods for its suppression. Should any disaster, like that of Johnstown, create unsanitary conditions that threaten the health of a community, the Board is on hand to exercise a counteracting influence. If, through carelessness, malice or selfish motives, any important water supply is contaminated or any food product of dangerous character put upon the market, the Board brings a corrective power to bear. All these are its duties prescribed by the law, and though they labor without profit to themselves and often at a sacrifice, the Board has at all times proved faithful and efficient."

"One of the most practical features of their work is the distribution, free of all cost but postage, of pamphlets and circulars treating of the preservation of health and the precautionary methods advisable in cases of contagious disease.

"These circulars tell how to avoid contracting the several diseases, how the patient should be isolated who is suffering from them, how the health of the other members of the household and the public generally is to be protected, methods of disinfecting, precautions at funerals, etc. The information thus given is thoroughly scientific, clothed in plain language, and the suggestions are all practical."

APATHY OF LOCAL AUTHORITIES.

The law of 1851, authorizing the incorporation of boroughs, places the responsibility of the preservation of the public health in each such borough upon its council. The instances are comparatively few where this responsibility appears to be properly appreciated by the members of that body. An ordinance to prevent swine running at large, and keeping filthy pig pens, is often the extent of the sanitary legislation which they attempt, and even this is not enforced. Your secretary is constantly receiving complaints of nuisances of the most disgusting and dangerous character existing in the midst of thriving towns, in which it is declared that the council has been appealed to repeatedly for relief and either has paid no attention to the complaint or has been unable to enforce its own orders for abatement.

NATIONAL POLITICS IN TOWN ELECTIONS.

This state of things will continue so long as national politics is permitted to be a factor in municipal elections in small towns; so long as men are elected to councils, not because of their known integrity, intelligence and public spirit, but because they are good workers for their party. It matters not an iota whether the men who are called upon to administer the municipal affairs of Hugginsville, are in favor of bimetalism or believe the tariff to be a tax, but it matters tremendously, even to the extent of life and death, whether they are men of sufficient education and intelligence to understand the importance of forbidding public funerals of those who have died of certain contagious diseases, and of sufficient backbone to close up a filthy slaughter-house that is polluting the air of their town, even if it belongs to the richest man in the place, and of sufficient forethought to provide an abundant supply of pure water for their fellow citizens to drink. Sanitary reform in short rather than tariff reform should be the test and watchword of the canvass for all small towns; and large cities would be none the worse for making the same change in their political methods.

ADOPTION OF A REGULATION FOR THE RURAL DISTRICTS.

When the Board was first established, it anticipated little opposition to such a complete sanitary organization of the state as would relieve it to a great extent of the administration of sanitary law in the villages

and rural districts. It therefore drew up a sanitary code for the instruction of local health authorities, which, as it was designed as a basis for the organization of their work, it denominated the "Model Ordinance." The anticipated establishment of local boards throughout the state, however, seems as far off as ever. The paucity of sanitary statutes often seriously embarrasses the Board in its efforts to remedy conditions prejudicial to the public health. The recommendation is therefore offered that the Model Ordinance be adopted as a regulation of the Board, and that in all places in which the Board is made responsible for the preservation of the public health, the provisions of this regulation be considered binding and a sufficient justification and warrant for action taken by the secretary.

VOLUNTARY SANITARY PROTECTIVE ASSOCIATIONS.

In the absence of legal provision for the sanitary care of villages, their residents, especially in the neighborhood of large cities, deeply impressed with the necessity for the removal of the dangerous conditions which surround them, have in some instances united in the formation of a local committee having for its object the better protection of life and health in their communities, and have sought the advice of the State Board of Health as to the most effective method of organization for such purposes.

Such information in a succinct form is contained in a paper read by your secretary before the state sanitary convention at Lewisburg, founded on the success of a well-known society for that object at Newport, R. I. He therefore suggests the issue of that paper, or such portions of it, as the committee on sanitary legislation, rules and regulations may deem expedient, in circular form.

SANITARY MANAGEMENT OF DAIRY FARMS.

The positive proof that we possess of the frequent transmission of typhoid and scarlet fevers through the medium of polluted milk, and the extent to which tuberculosis has been found to prevail among milch cows, especially those of the finer unmixed breeds, are a cause of great anxiety. When we add to these facts the possibility, to say the least, that the use of the milk of tuberculous cows may be a means of communicating that most fatal of all diseases, consumption, to human beings, ample reason must be acknowledged to exist for efforts to place all milk-giving cattle under the best possible hygienic conditions. The secretary would, therefore, suggest the propriety of the preparation of a circular on the sanitary management of herds and dairies, for distribution among farmers and dairymen.

COMMUNICABLE (CONTAGIOUS AND INFECTIOUS) DISEASES.

The occurrence of contagious or communicable diseases has been reported to the Board from the following places during the year, and successful action taken to prevent their spread :

Typhoid fever at Pottsville, Schuylkill county.
Typhoid fever at Scotland, Franklin county.
Typhoid fever at Bethlehem, Northampton county.
Typhoid fever at Two Lick, Indiana county.
Typhoid fever at Lancaster, Lancaster county.
Typhoid fever at Beaver Meadow, Carbon county.
Typhoid fever at Wallingford, Chester county.
Typhoid fever at Devon, Chester county.
Typhoid fever at Cressona, Schuylkill county.
Typhoid fever at Forest City, Susquehanna county.
Typhoid fever at Millville, Columbia county.
Typhoid fever at Lebanon, Lebanon county.
Malarial fever at Sandy Lake, Mercer county.
Malarial fever at Shanksville, Somerset county.
Malarial fever at Montrose, Susquehanna county.
Cerebro-spinal fever at Cheswick, Allegheny county.
Diphtheria at Parsons, Luzerne county.
Diphtheria at Minersville, Luzerne county.
Diphtheria at English Centre, Lycoming county.
Diphtheria at Bangor, Northampton county.
Diphtheria at Chestnut Hill, Montgomery county.
Diphtheria at Prestonville, Montgomery county.
Diphtheria at Tyrone, Blair county.
Diphtheria at Galeton, Potter county.
Diphtheria at Nazareth, Northampton county.
Diphtheria at Hecksherville, Schuylkill county.
Diphtheria at Media, Delaware county.
Small-pox at Erie, Erie county.
Small-pox at Scranton, Lackawanna county.
Small-pox at Pittsburgh, Allegheny county.
Small-pox at Johnsonburg, Elk county.
Small-pox at Philadelphia, Philadelphia county.
Scarlet fever at Shippensburg, Cumberland county.
Scarlet fever at Howelville, Chester county.

Complaints of pollution of streams have been received as follows :

Of the Susquehanna river at Steelton, Dauphin county.
Of a stream near the Devon Inn, Chester county.
Of the Loyalhanna river at Saltzburg, Indiana county.
Of the Monongahela river at Braddock, Allegheny county.
Of a stream at Bulger, Washington county.

- Of the Brandywine river at Chadd's Ford, Chester county.
- Of the Brandywine river at Cossart's, Chester county.
- Of the Lebanon water supply, Lebanon, Lebanon county.
- Of the Bethlehem water works, Bethlehem, Northampton county.

INSPECTIONS

have been made by the Board or its members:

- At the Devon Inn, Chester county.
- At Altoona, Blair county.
- At Tyrone, Blair county.
- At Bitnerville, Lancaster county.

By the secretary :

- At Chadd's Ford, Chester county.
- At Cossart's station, Chester county.
- On the Delaware river, Delaware county.
- At Wayne, Delaware county.
- At Camp Sherman, Devon, Chester county.

By medical inspectors:

- At Parsons, Luzerne county.
- At Minersville, Luzerne county.
- At Scotland, Franklin county.
- At Greensburg, Westmoreland county.
- At Erie, Erie county.
- At Johnsonburg, Elk county.
- At Gettysburg, Adams county.
- At Bethlehem, Northampton county.
- At Two Lick, Indiana county.
- At Sandy Lake, Mercer county.
- At Cheswick, Allegheny county.
- At Media, Delaware county.
- At Chestnut Hill, Montgomery county.
- At Bulger, Washington county.
- At Prestonville, Montgomery county.
- At Millville, Columbia county.
- At Shippensburg, Cumberland county.
- At Nicholson, Wyoming county.
- At Cressona, Schuylkill county.
- At Camp Sherman, Devon, Chester county.
- At Wayne, Delaware county.
- At Lancaster, Lancaster county.
- At Tullytown, Bucks county.
- At Washington, Washington county.
- At Lenni, Delaware county.
- At Forest City, Susquehanna county.

At Schuylkill Haven, Schuylkill county.
At Howelville, Chester county.
At Wallingford, Delaware county.
At Lebanon, Lebanon county.
At Shanksville, Somerset county.
At Montrose, Susquehanna county.
At Butler, Butler county.
At Rochester Mills, Indiana county.

INTERSTATE NOTIFICATION OF CONTAGIOUS DISEASES.

Notification of the existence of contagious diseases has been given to and received from the secretaries of the boards of health of other states and provinces as follows:

Small-pox.

Notification sent to all other state boards of health on seven occasions covering five outbreaks in Pennsylvania.

Notification received from Alabama on one occasion, covering one outbreak.

California, on one occasion, covering one outbreak.
Connecticut, on three occasions, covering three outbreaks.
Florida, on one occasion, covering one outbreak.
Illinois, on two occasions, covering two outbreaks.
Massachusetts, on two occasions, covering two outbreaks.
Michigan, on two occasions, covering two outbreaks.
Minnesota, on two occasions, covering two outbreaks.
New York, on two occasions, covering one outbreak.
North Carolina, on one occasion, covering one outbreak.
Ohio, on two occasions, covering two outbreaks.
Quebec, on nine occasions, covering four outbreaks.
South Carolina, on one occasion, covering one outbreak.
Tennessee, on three occasions, covering two outbreaks.
West Virginia, on one occasion, covering one outbreak.
Wisconsin, on four occasions, covering three outbreaks.

CIRCULARS.

The following is a list of the circulars which have been issued during the year:

Circular No. 28. Precautions against Consumption (second edition).

Circular No. 29. The Dangers arising from Public Funerals of those who have died from Contagious and Infectious Diseases. Addressed to the clerical profession (second edition).

Form 24. Annual Report of Local Boards of Health.

Announcement of State Sanitary Convention at Altoona.

Programme of State Sanitary Convention at Altoona.

Circular No. 32. Precautions against Sunstroke.

Circular No. 33. School Hygiene No. 2. Addressed to school directors, controllers and trustees.

The number of circulars sent out during the year has been 20,508.

The number of boxes of circulars sent out during the year has been 426.

The number of written communications received during the year has been 1,794.

The number of written communications sent out during the year was 1,777.

The additions to the library during the year have been, in books, 98; in pamphlets, 34; books purchased, 6.

FINANCIAL REPORT.

The following have been the expenditures of the Board during the year ending November 12, 1891:

Traveling and other necessary expenses of members, inspectors and lecturers	\$485 29
Inspectors	766 70
Quarantine, disinfections and vaccination	180 96
Advertising and printing	120 28
Distribution of reports by state printer	289 79
Sanitary convention expenses	66 65
Registration	18 10
Incidental expenses of office:	
Traveling expenses of secretary and clerk	\$183 31
Clerical assistance	990 06
Postage	184 94
Freight and express charges	67 72
Books, journals, transactions and stationery . .	47 92
Apparatus and furniture	19 00
Analysis,	10 00
Storage, portorage, etc,	113 97
Telegrams	26 31
Janitor, messenger and sundries	11 05
	— — \$1, 654 28
Total	<u>\$3, 582 05</u>

Respectfully submitted.

BENJ. LEE,
Secretary and Treasurer.

MINUTES OF THE BOARD.

Special Meeting, December 22, 1890.

Special meeting
December 22, 1890.

A special meeting of the Board was held Monday, December 22, at the executive office, at 3 p. m. Present, Drs. Groff, Dudley and Lee.

The secretary presented the pay rolls and vouchers for the expenditures incurred in abating the nuisances caused by the floods of May 31, 1889, amounting to \$39,928.75, which had been approved by the executive committee. They were on motion approved.

The Board then adjourned.

BENJAMIN LEE,
Secretary.

Special meeting
March 5, 1891.

A special meeting of the Board was held at the Bolton House, Harrisburg, Thursday, March 5, 1891, at 2 p. m.

Members present.

Present, Drs. Groff, Edwards, Dudley and Lee; the president, Prof. George G. Groff, in the chair.

On motion, the reading of the minutes of the previous meeting was dispensed with.

Report of sanitary
legislation com-
mittee.

On behalf of the committee on sanitary legislation, the secretary presented drafts of bills for the following purposes, viz:

Appropriation act.

To appropriate the sum of \$10,000 per annum for the uses of the Board for the next two years. This bill was, on motion, approved for presentation to the legislature.

Pollution of water
supplies act.

"An act to prevent the pollution of and relating to the purification, improvement, construction and use of systems of water supply, and authorizing the State Board of Health to have supervision over the same, and providing remedies in relation thereto."

Amendment of
water act.

The secretary explained that the committee had introduced a bill for the same purpose at the opening of the legislative session, that the same had been laid before a meeting of representatives of water companies at Pittsburgh. At this meeting certain objections to the bill were pointed out and amendments suggested. The present bill was the result of this conference. Dr. Ed-

wards suggested that section 6, requiring the State Board of Health to report every violation of this act to the district attorney of the proper county, did not make it the duty of this officer to prosecute. After discussion, on motion of the same gentleman, it was decided to add to the section referred to the following: "Whereupon the said district attorney shall without unnecessary delay enter suit in the name of the commonwealth against the person or persons committing such violation." The secretary was instructed to request the committee on public health and sanitation of the House of Representatives to cause this amendment to be offered.

Amendment to section 6.

A bill entitled "An act for the better preservation of the public health, to establish local boards of health, and to secure the registration of vital statistics in cities of the third class, boroughs and townships." The special object of this bill was to secure uniformity of sanitary organization and the registration of vital statistics throughout the state, and particularly to provide a form of sanitary organization for the rural districts. This bill elicited considerable discussion. The general impression of the Board appeared to be that the townships were not yet ready for local boards, and that the township officers named in the bill were not sufficiently intelligent, educated or responsible to be entrusted with duties of so much importance. The president suggested that possibly a bill could be drafted providing simply for the registration of vital statistics, and appointing the town clerk of each township as registering officer for the Board. The secretary was instructed to draw up a bill on this basis.

Act to establish boards of health.

Local board bill withdrawn.

The secretary announced that the committee on public health and sanitation of the House of Representatives had secured the use of the hall of the House for the evening of the same day for the purpose of hearing the arguments of the Board in favor of the bill for the protection of the purity of sources of water supply, and had invited the members of both branches of the legislature to be present. He, therefore, moved that when the Board adjourns it adjourns to meet at the hall of the House at 8 o'clock this evening, in response to the invitation of the committee on public health and sanitation of the House of Representatives.

Public meeting in the hall of the House of Representatives.

Presentation of accounts being in order, the secretary presented vouchers numbered 409 to 425 inclusive,

Presentation of accounts

amounting to \$750.82, which had been audited and approved by the executive committee. On motion they were approved and their payment authorized.

Death of Dr. James L. Stewart. Appointment of Dr. A. A. Woods as medical inspector.

The secretary reported the death of Dr. James L. Stewart, of Erie, medical inspector for the lake district. To fill the vacancy thus created, he nominated Dr. A. A. Woods, health officer of Erie, who had for some years been assisting Dr. Stewart in his inspections, in consequence of the failing health of the latter, and had proved himself a reliable and competent officer. On motion, the nomination of Dr. Woods was confirmed, and he was declared elected to the position of medical inspector of the Lake District.

Adjournment.

General meeting in the hall of the House of Representatives at Harrisburg.

The Board then, on motion, adjourned, to meet at 8 p. m.

At 8 p. m. of the same day (March 5, 1891), the Board reconvened in the hall of the House of Representatives. A general meeting was then held, composed of members of both branches of the legislature, and the Hon. Henry F. Walton, member of the committee on public health of the House, was called to the chair. In addition to the members present at the previous meeting, Dr. Samuel T. Davis, of Lancaster, was in attendance. Addresses were made by the president of the Board, Prof. George G. Groff, Dr. Pemberton Dudley, Dr. Benjamin Lee, Dr. J. F. Edwards, Dr. Samuel T. Davis, Dr. Wm. B. Atkinson, medical inspector, Dr. Spencer M. Free, medical inspector, Dr. Henry Leffmann, water analyst, Mr. H. W. Hartman and Mr. Meredith, both the latter gentleman representing the association of twenty-six water companies west of the Allegheny mountains. Letters were read from Dr. Charles M. Cresson, water analyst, from Dr. E. D. Payne, medical inspector, on behalf of the borough of Towanda, and from representatives of municipal corporations or water companies of a number of cities and boroughs in the eastern part of the state, expressing their approval of the bill.

Addresses by members of the Board and others.

So far as it was possible to form an opinion, the members of the legislature present were favorably impressed by the arguments advanced.

Adjournment

The Board then, on motion, adjourned.

BENJAMIN LEE,
Secretary.

Special Meeting, May 1, 1891.

A special meeting of the Board was held at the executive office on Friday, May 1, 1891, at 3 p. m. Special meeting.

Present, Hon. Samuel T. Davis, M. D., Pemberton Dudley, M. D., Benjamin Lee, M. D., and J. F. Edwards, M. D. (by proxy).

In the unavoidable absence of the president the Hon. Samuel T. Davis was called to the chair.

The secretary presented an invitation from the National Conference of State Boards of Health to the Board to send delegates to the approaching meeting at Washington, D. C. Delegates to National Conference of State Boards.

On motion, Drs. Groff and Lee were appointed as delegates.

On behalf of the committee for sanitary convention, the secretary presented and read a copy of the announcement of the fifth sanitary convention to be held at Altoona, on the 15th and 16th instant. A copy of the announcement of the convention, sent to the leading papers and other journals in the state, was also read. Also a proof copy of the programme. Sanitary convention announcement and programme.

The report was accepted and programme approved with slight alterations.

The secretary reported that the borough council of Steelton had recently complained that the Susquehanna river at that place was being seriously polluted by the deposit of night soil and garbage on the banks thereof, and their inability to prevent this nuisance. They asked for the intervention of the Board in this matter. Nuisance at Steelton.

The secretary was instructed to proceed in the usual way for abating this nuisance.

A recent outbreak of typhoid fever among the employes of the Pottsville Iron and Steel Company had led to suspicion of the water drunk by the employes. Dr. James S. Carpenter, of Pottsville, had submitted samples of water taken from the suspected spring to the Board. Dr. Cresson pronounced the water as swarming with typhoid bacilli. The secretary wired Dr. Carpenter of the result of Dr. Cresson's examination, and the spring was at once closed, an immediate abatement of the cases of fever being apparent. Subsequently the company had submitted samples of water from this spring to Dr. Formad for analysis, who pronounced the water pure. A further examination of samples of water from the same Typhoid fever at Pottsville

spring by Dr. Cresson, taken at a later period, were by him also pronounced as pure.

The action of the secretary was approved.

Approval of
accounts.

Dr. Pemberton Dudley submitted vouchers numbered 426 to 436, amounting to \$460.14 of accounts examined and approved by the executive committee.

On motion, they were approved, as was also voucher 438 for \$5.16.

The Board then adjourned.

BENJAMIN LEE,
Secretary.

Eighteenth regular
meeting.

The eighteenth regular meeting of the Board was held at Altoona, May 14, 1891, at 4 p. m., at the Logan House.

Members present,

Present, Dr. George G. Groff, president; Dr. Pemberton Dudley, Dr. J. H. McClelland, Dr. Benjamin Lee, secretary.

The president in the chair.

The secretary read a telegram from Dr. S. T. Davis, stating that he was unable to be present owing to professional duties. Dr. J. F. Edwards had personally expressed to the secretary his regrets that he would be unable to attend the meeting.

Order of business.

An order of business, presented by the secretary, was adopted as the order of the day.

Confirmation of
minutes.

The minutes of the last regular meeting held at Harrisburg, November 13, 1890, were read and confirmed.

The minutes of special meetings held at Harrisburg, March 5, 1891, and at Philadelphia, May 1, 1891, were also read and confirmed.

Prohibiting impor-
tation of rags from
Spain.

The secretary stated that the resolution of the Board with regard to prohibiting the importation of rags from Spain, had been sent to the authorities of all ports of entry in Pennsylvania; also to Dr. John B. Hamilton, of the marine hospital service, Washington, D. C., and all maritime ports on the eastern coast of the United States.

Secretary's report.

The secretary then presented his report, which contained the following items:

Delegate to meeting
of American Public
Health Association.

1. Report of secretary as delegate to the meeting of the American Public Health Association, held at Washington, D. C.

Delegate to Na-
tional Conference
State Boards.

2. Report of secretary as delegate to the national conference of State Boards of Health, held at Washington, D. C.

3. Report of secretary as secretary to the section on state medicine of the American Medical Association. The secretary suggested that a valuable paper on school hygiene, prepared by Drs. Lincoln and Reed, be inserted in the annual report. The matter was referred to new business.

Secretary section
on State medicine.

4. The fifth annual report of the Board, containing 726 pages and index, comprising 12 appendices, one of which is devoted to the history of the work of the Board in Johnstown, had been partially issued since last meeting. Some delay had taken place in the distribution owing to the lack of funds. Included with this report are the reports of the State Weather Service and that of the State Pharmaceutical Examining Board.

Fifth annual re-
port.

5. The sixth annual report of the Board was now ready for the printer, awaiting the report of the state pharmaceutical examining board, which had been mislaid in some other department. Unless this last named report was forthcoming in a few days the secretary would give instructions for proceeding with the printing.

Preparation of
sixth annual re-
port.

6. In reply to a request for the filling up of an abstract form (a copy of which would be presented to the board later) of annual report of 1890, the Altoona, Bradford, Carbondale, Chester, Johnstown, Lebanon, Meadville, Norristown, Reading, Scranton, Titusville, Wellsboro', Williamsport and Oil City boards of health had complied, and their reports were presented.

Reports in abstract
from local boards of
health.

7. Information from the consul-general at Carthage that the steamship "Orpington," from that port, in which two cases resembling cholera have just occurred, was expected shortly at Philadelphia, was recently received by the secretary from the supervising surgeon general of Marine Hospital Service. He at once notified the Philadelphia authorities of the fact.

Steamship Cartha-
gena from infected
port.

8. The secretary read copy of a letter sent by Dr. John B. Hamilton, surgeon general United States Marine Hospital Service, to the president of the Philadelphia board of health, in regard to the isolation of lepers in the United States, expressing the opinion that congress should legislate upon the subject.

Isolation of lepers

9. The leper Anderson was still confined at the Delaware county hospital, near Lima. The difficulty of his removal being due to the fact that all the steamship companies decline to ship a case of leprosy. The question

Leprosy case at
Lima hospital.

of the ultimate disposal of this case was referred to new business.

diphtheria at Parsons, Luzerne county, and at Minersville.

10. A report that diphtheria prevailed to an alarming extent and in a malignant form at Parsons, Luzerne county, was, on investigation by Medical Inspector L. H. Taylor, found not to be well founded. A similar report of an epidemic at Minersville was investigated with a like result. Circulars had been freely distributed, and a copy of a letter of instructions sent to the burgess of Progress was now read.

Diphtheria at English Centre.

11. A complaint that diphtheria prevailed at English Centre had been received. Circulars were sent.

Removal of dead bodies in Pittsburgh.

12. The bureau of public safety of Pittsburgh had complained that bodies were being disinterred and removed from one cemetery in that city to another without permit. The secretary replied at once, stating the Board would use its authority in this matter, in case a nuisance was being created. On further inquiry it was found that most of the bodies removed had been buried from thirty to fifty years. The Board, therefore, did not feel called upon to interfere.

Certificates of deaths in Pennsylvania requested by the consul general of Italy.

13. Several applications for certificates of deaths of Italians in Pennsylvania had been received of late from the consul general of Italy. Such information could rarely be obtained, owing to the lack of any system of registration. It was a humiliating fact that Pennsylvania was in some instances indebted to the State of New York for a record of vital statistics in her own borders.

Diphtheria at Bangor.

14. An epidemic of diphtheria at Bangor, Northampton county, had been met with prompt and effective measures for its suppression from the sanitary committee of the borough council. Handbills and posters, warning persons against the disease, etc., had been freely distributed throughout the town and in families. No public funeral (except in one instance, in which there was an error in diagnosis) had been held. This commendable action on the part of the local authorities was referred to new business.

Attorney General's opinion on powers of State Board.

15. The secretary had consulted the Attorney General by correspondence, as to the power of the State Board in the suppression of contemplated epidemics. His answer (which was now read) was to the effect that the powers of the Board were designed to be used only in the presence of or on the near approach of an epidemic, and

could not be extended to general regulations of a preventive character.

The Board then adjourned to meet at 8 o'clock the same evening. Adjournment.

The Board reconvened at 8 p. m. The secretary continued the presentation of his report.

16. A recent investigation into the cause of typhoid fever at Scotland, Franklin county, by Medical Inspector R. L. Sibbet, had lead him to attribute the outbreak to the use of impure drinking water from two wells. He had advised that cistern water be used for domestic and culinary purposes, there not being a pure well in the place. Owing to the porous nature of the soil, impure water found its way into the wells from several sources which he indicated to the people. Typhoid fever at Scotland, Franklin county.

17. A complaint from the authorities of Carbondale had been received, stating that impure ice was being stored by a dealer for use in their city. The secretary had in the first instance advised that the man be requested to sell the ice only for cooling purposes. This was declined. He then advised that the local board give public notice that the offender was dealing in impure ice, which was replied to by a threat of legal proceedings. In the event of this being done, the secretary further advised that the dealer's wagons be placarded. Sale of impure ice at Carbondale.

18. An extract from the last message of Governor Beaver, commending the action and measures of the Board at Johnstown, and advising the legislature to confer additional powers upon and make a larger appropriation to the Board for its uses, was read by the secretary. Extracts from Governor Beaver's last message.

19. A very able paper, written by Dr. R. Harvey Reed, health officer of Mansfield, Ohio, condemnatory of the usual mode of conducting slaughter houses, was now read. The paper was referred to new business. Report on inspection of slaughter houses, by Dr. R. H. Reed.

20. A complaint had recently been received from Mr. Frank Cowan to the effect that the sanitary condition of the court house at Greensburg, Westmoreland county, was deplorable, owing principally to the fact that the basement was used as a prison, and the cells were inadequately ventilated and very filthy. Medical Inspector W. E. Matthews had inspected the jail and fully corroborated the complainant's statement. The secretary had at once condemned these cells, and suggested other remedies. The prison was shortly afterwards removed to Insanitary prison cells at Greensburg.

another building, and the cellars of the court house thoroughly cleaned and disinfected.

Small-pox at Scranton.

21. A case of varioloid at Scranton had been contracted through handling mails from Texas; the patient being a letter carrier. The case was promptly isolated and children in the neighborhood freely vaccinated. No further case resulted.

Small-pox at Erie.

22. A case of small-pox had occurred at Erie from a similar cause, in the person of a teacher in a brotherhood school. The health officer, Dr. Woods, had at once placed the patient in hospital, and instituted gratuitous vaccination, which had been performed in 845 cases. The school was closed. No other cases occurred.

Small-pox at Johnsonburg, Pennsylvania.

23. An alarming outbreak of small-pox at Johnsonburg, Somerset county, was reported to the secretary by Dr. J. W. Palmer, on February 3. Medical Inspector Spencer M. Free was notified at once, and took charge of the district the same day, establishing strict quarantine and vaccinating over 2,000 children and adults. The secretary had also visited the district, and had had a conference with the railroad officials; and every effort had been made to prevent the spread of the disease. Eleven cases and four deaths had occurred. What might have been a wide-spread epidemic was thus stamped out. The commendable action of Medical Inspector Free in this matter was referred to new business.

Case of small-pox on steamship "Helmsley."

24. Information that the steamship "Helmsley," from Philadelphia, had put into Norfolk, Va., with a case of small-pox on board, was recently received by the secretary. Both the port physician and the local company surgeon had examined this patient on the previous Saturday in Philadelphia, and had failed to correctly diagnose the case. The secretary thought it possible that the four recent cases of small-pox in Philadelphia might have emanated from this steamer.

Use of flesh of pregnant animals.

25. An inquiry had been received from Middletown as to the use of flesh of pregnant animals. The secretary had replied that there was no law on the subject, and had no knowledge that such meat was unwholesome.

Deficient drainage at Gettysburg.

26. A complaint of an open sewer and deficient drainage at Gettysburg has been received. Medical Inspector R. L. Sibbet had been instructed to investigate, and had verified the reported condition. He had conferred with the council, and also addressed a public meeting of citizens called at his suggestion to consider the subject.

No definite steps to remedy the condition had up to the present time been taken, the board having no power to enforce sewerage.

27. A considerable number of typhoid fever cases had occurred at and near Bethlehem in the past few months. Medical Inspector Chas. McIntire, Jr., had fully investigated the matter, and reported the origin of the cases to be the use of impure water. He submitted a plan showing locality of cases and their relation to the water supply. There had been 492 cases and 33 deaths.

Typhoid fever at Bethlehem.

28. A recent inspection of Two Licks, Indiana county, by Medical Inspector W. E. Matthews, showed that there had been 60 cases of typhoid fever, out of a population of 80 souls, one out of every eight attacked having succumbed to the disease. The supply of water was from impure wells. The secretary had advised that driven wells be provided, and received assurances from proprietors of manufactories that this should be done.

Typhoid fever at Two Licks.

29. A complaint having been received that much malarial sickness prevailed at Sandy Lake, Mercer county, Medical Inspector A. A. Woods had investigated and reported that the village was built on swampy low ground. The drainage was deficient, and neighboring streams sluggish, causing cellars to be frequently flooded, and thus producing sickness. No remedy, except improved drainage was possible, and the secretary advised the removal of habitations to higher ground, the Board having no authority to undertake engineering operations.

Malarial fevers at Sandy Lake, Mercer county.

30. On information of death from cerebro-spinal fever at Cheswick, Allegheny county, Medical Inspector J. R. Thompson had inspected the place. He reported two deaths in one family, of children five and seven years of age, of this complaint. He had recommended a general cleaning up of the place.

Cerebro-spinal fever at Cheswick, Allegheny county.

31. A complaint had been received from the sanitary committee of Media, Delaware county, that proper precautions had not been taken in a recent case of malignant diphtheria occurring in a school of that town. Medical Inspector W. B. Atkinson investigated this matter, and reported that very stringent precautions had been taken, and there was no ground for complaint whatever.

Diphtheria at Media, Delaware county.

32. The secretary had been in correspondence with the United States marine hospital service at Washington, D. C., with reference to rendering the quarantine service at the mouth of the Delaware Bay more efficient. With

Disinfecting pier at Delaware Break-water.

regard to the bill now before the legislature, he read a communication from Supervising Surgeon General Hamilton stating that it was in contemplation shortly to provide very efficient means for disinfection at the Delaware breakwater, the government iron pier having been lent to his department for the purpose.

Amended form of transit permits for dead bodies.

33. The Iowa State Board of Health had submitted an amended form of transit permit for the shipment of bodies dead of contagious diseases, in which the transportation of bodies dead of diphtheria was forbidden. The matter was referred to new business.

Analyses of water.

34. By request of the borough authorities of those places eight specimens of water from Punxsutawney, Spring Creek, Marietta and Northumberland, had been submitted to and examined by the board's analyst, all of which were found contaminated by vegetable and cess-pool material.

Devon Inn drainage pollution.

35. A further complaint of the pollution of a stream by drainage from the Devon Inn, in consequence of new houses having been connected with the system, was referred to new business.

Pollution of a stream by dead animals.

36. The Bethlehem Steam, Gas and Water Company had complained of the presence of two dead animals in a stream used for domestic purposes. The secretary had replied stating the facts with regard to the bill on this subject before the legislature and had suggested recourse to the courts.

Adulteration of food in Pennsylvania.

37. The Hon. J. M. Rusk, Secretary, Department of Agriculture, had requested an answer to certain questions with regard to the adulteration of food in Pennsylvania. The matter had been referred to Dr. Henry Leffmann, food analyst to the State Board of Agriculture.

The Board's correspondence, etc.

38. The total number of written communications received by the secretary since the last regular meeting had been 981; the total number sent had been 962.

Library

39. The additions to the library during this period had been books, 20; pamphlets, 21.

Circulars and reports issued.

40. Circulars distributed, 15,418; annual reports sent out in exchange, etc., 1,325.

It was now

Resolved, That the report of the secretary, as detailed, be accepted and approved.

Adjournment.

The Board then adjourned to meet at 5:30 p. m., May 15, 1891 (the following day).

Reports of standing committees being in order, Dr. Pemberton Dudley submitted a report from the executive committee, showing that two regular and two special meetings of that committee had been held since the annual meeting of the Board in November last, when accounts (vouchers numbered 409 to 438 inclusive) were examined and approved, amounting to \$1,504.89. The report was accepted.

Reports of standing committees.

Dr. Benjamin Lee, as chairman of the committee on vital statistics, reported the preparation of a form for the return of reports of boards of health in abstract. The report was accepted and referred for publication.

Mr. Howard Murphy, C. E., chairman of the committee on drainage, water supply, etc., had sent a communication urging the Board's attention to the Devon Inn drainage nuisance. The report was accepted.

In the absence of Dr. S. T. Davis, chairman of the committee on sanitary legislation, rules, etc., Dr. Lee reported progress as regards the bills before the present legislature. A copy of the annual report for 1888, together with specimen box of all the Board's circulars to date, and cyclostyle letter had been sent to each member of the legislature. The report was accepted and referred for publication.

Dr. J. H. McClelland, chairman committee on sanitary convention, submitted a report which was accepted.

Accounts, voucher No. 437, which had been audited and found correct by the executive committee, amounting to \$288.97, were now submitted to and approved by the Board.

The Board then adjourned to meet at 10 p. m. the same day.

Adjournment.

The Board reconvened at 10 p. m. the same evening.

New business being in order, the secretary submitted a new antiseptic raw cotton blanket as a substitute for the wet sheet at present in use for enveloping bodies dead of contagious diseases. On motion, it was

New business

Resolved, That this Board approves of and recommends the antiseptic envelope for the bodies of those who have died of contagious diseases, proposed by the secretary as a substitute for the sheet soaked in corrosive sublimate solution heretofore required by the Board.

Antiseptic cotton blanket.

The secretary submitted a circular prepared by the president on the treatment of the apparently drowned and suffocated, for distribution in families and schools

New circulars.

and posting on vessels, wharfs and near bathing resorts, etc., in two forms. Also a circular on the construction of school houses, for distribution among trustees, school directors, etc. The circulars were approved, the school hygiene circular being ordered to be submitted to the committee on school hygiene, etc., for its consideration.

Leprosy at Chester.

In the matter of the ultimate disposal of the case of leprosy at Lima, Delaware county, the case was left in the hands of the secretary.

Diphtheria at Bangor.

With regard to the prompt measures adopted by the sanitary committee of the borough council of Bangor against diphtheria, it was ordered that the following resolution be sent to the committee:

Resolved, That the State Board of Health has received with great satisfaction the report of the recent action of the sanitary committee of the borough council of Bangor in stamping out an epidemic of diphtheria, and heartily recommends the promptness and decision with which the emergency was met.

Inspection of slaughter houses report.

A paper on "Report of an Inspection of Slaughter Houses," etc., by Dr. R. Harvey Reed, of Mansfield, Ohio, was referred to the committee on sanitary legislation, rules and regulations.

Resolution commending the action of Dr. S. M. Free.

The secretary was instructed to transmit the following resolution to Dr. Spencer M. Free, medical inspector for the western slope district:

Resolved, That this Board desires to express its hearty appreciation of the good judgment and energy displayed by Dr. Spencer M. Free in his management of the recent threatening epidemic of small-pox at Johnsonburg, which, but for his prompt interference and constant presence, might have readily extended to every part of the state.

Amended form of transit permit.

With regard to amending the regulation for the shipment of bodies dead of contagious diseases, it was not considered expedient that diphtheria should be classed with those diseases from which the bodies of those who have died should be prohibited from transportation.

In view of the fact that the term heart failure is often used to conceal the real cause of death, it was

Certificates of death from "heart failure."

Resolved, That all boards of health in this state be recommended to refuse certificates of death giving "heart failure" as the sole cause of death.

The subject of the drainage of the Devon Inn being called up, it was

Resolved, That in view of the recent additional com-

plaint, and of the fact that the Board was not satisfied on its inspection of the Devon Inn drainage purification system that the liquid after leaving the filter was in proper condition to enter a public stream, this subject be again referred to the committee on water supply, drainage, etc.

The Board then adjourned.

Adjournment.

BENJAMIN LEE,
Secretary.

Nineteenth Regular Meeting.

The nineteenth regular meeting of the Board was held in the supreme court room, Harrisburg, at 4 p. m., July 9, 1891.

Nineteenth regular meeting.

Present, Drs. Geo. G. Groff, Pemberton Dudley, S. T. Davis and Benjamin Lee, secretary.

Members present.

The president in the chair.

The secretary read a communication from Dr. J. H. McClelland, stating that he would be unable to be present. Dr. J. F. Edwards had also personally expressed to the secretary his regret at being unable to attend.

An order of business, presented by the secretary, was adopted as the order of the day.

Order of business.

The minutes of the last regular meeting, held at Altoona, May 14, were read and approved.

Approval of minutes.

Drs. Groff and Dudley, who had been reappointed as members of the Board, presented their commissions, and received the congratulations of the other members.

Reappointment of members.

The secretary then presented his report, which included the following items:

Secretary's report.

1. In accordance with the instructions of the Board the resolutions of approval to Dr. Spencer M. Free and the sanitary committee of the borough council of Bangor had been sent immediately after the last regular meeting.

Resolutions to Dr. Free and others.

2. The secretary had received a communication announcing the fact that a board of health had been established at Coatesville, of which Dr. Ida V. Riel had been appointed secretary. It was the first instance within his knowledge of a woman becoming secretary of a board of health.

Coatesville board of health.

3. A complaint that malignant diphtheria and scarlet fever prevailed at a house at Chestnut Hill had been investigated by Dr. Wm. B. Atkinson, medical inspector. He reported that the drainage from a cesspool had found its way into the cellar and lodged there, owing to the imperious nature of the soil; and that the heater in the cellar

Diphtheria and scarlet fever at Chestnut Hill.

assisted in disseminating the germs of disease throughout the entire house. One fatal case had occurred. He recommended that the soil in the cellar be excavated and replaced with fresh earth, and the plumbing thoroughly disinfected. In regard to the service of a notice to abate this dangerous condition, the secretary asked whether notice should be sent to the landlord or his agent. The matter was referred to new business.

Pollution of the
Loyalhanna river at
Saltsburg.

4. A serious condition, caused by the pollution of the Loyalhanna river at Saltsburg by dead animals, night soil, etc., was recently reported to the secretary by the Rev. S. W. Miller, of Saltsburg. The pollution was, in the opinion of the reporter, sufficient to contaminate the waters used by Pittsburgh and Allegheny for drinking purposes. In reply the secretary had pointed out to the reverend gentleman that the last legislature had strenuously opposed legislative interference with the pollution of streams in Pennsylvania, leaving the Board helpless in the matter. He had asked the co-operation of the clerical and other professions in the effort to induce the legislature to pass enactments prohibiting such pollution.

Defective drainage
at Jenkintown.

5. A verbal complaint of defective drainage at Jenkintown had been made to the secretary. The nuisance was caused by the drainage from ten houses. The complaint was confirmed by one of the Jenkintown physicians. On receipt of notice from the Board to abate, a member of the borough council had replied, stating that the streets in question would shortly be paved and drained, and the nuisance abated.

Defective drainage
at Altoona and at
Chadd's Ford.

6. A complaint of defective drainage at Altoona had not been confirmed by affidavit as required.

7. A similar complaint at Chadd's Ford had also failed of the proper support.

Pollution of river at
Braddock.

8. A complaint of the pollution of the Monongahela river at Braddock, caused by the dumping of garbage from a boat at the instance of the borough authorities of that place had been received. As the Pittsburgh authorities had ample powers extending five miles outside the city limits, and Braddock was situated within that distance, no action was deemed necessary.

Pollution of stream
at Bulger.

9. A complaint of the pollution of a stream at Bulger, Washington county, by decomposing whey and refuse from a creamery had been made to the Board. A similar condition existed at this creamery last year and the

abatement of the nuisance and then been ordered. The Board directed that immediate action be taken.

10. Application having been made for a copy of the death certificate of an Italian who was killed at Pottsville on the railroad, the secretary had applied to the burgess for certificate. The Board directed that application be made to the county coroner.

Death certificate of an Italian.

11. Complaint has been received of a nuisance at Morrisdale mines, Clearfield county, from a slaughter house. The usual forms had been sent, but no reply has yet been received.

Nuisance at Morrisdale Mines.

12. A complaint that diphtheria prevailed in a malignant form at Prestonville was investigated by Medical Inspector William B. Atkinson. He reported the defective drainage of a cellar where the fatal cases had occurred, and had ordered the nuisance abated and cellar cleansed.

Diphtheria at Prestonville.

13. Two complaints of defective drainage at Lansdowne, Delaware county, had been received, but not being in proper order had been returned for amendment.

Defective drainage at Lansdowne.

14. A communication was presented from the board of health of Lancaster, complaining that undertakers declined to pay the charge of twenty-five cents for burial permits, and asking for a decision of the Board as to its power to make such a charge. The Board referred the matter to new business.

Burial permits at Lancaster.

15. The secretary announced his appointment by the Governor on the commission for considering the removal of the quarantine station of Philadelphia. A copy of the bill was also read. The commission had recently met at Harrisburg, and had appointed the Governor as chairman, Dr. Henry Leffmann as secretary, and George J. Brennan as clerk. The commission had already visited the quarantine station. The secretary requested permission to incorporate the regulations of the board of health of Philadelphia for the disinfections of vessels and baggage in the annual report. Referred to new business.

Appointment of commission for removing quarantine station.

16. In establishing a local board of health at Phoenixville, the authorities there had adopted the model ordinance of the Board, and proposed to go to work vigorously to enforce it.

Local board of health at Phoenixville.

17. A complaint of an epidemic of typhoid fever in a suburb of Lancaster, received since the opening of the meeting, was ordered to be investigated forthwith, Dr.

Typhoid fever at Lancaster.

Davis supporting the complaint from his personal knowledge.

Adoption of report.

The secretary's report as a whole was now adopted.

Reports of standing committees.

Reports of the standing committees being in order:

Executive committee.

The executive committee (Dr. Pemberton Dudley, chairman) reported that one meeting had been held since the last regular meeting of the Board, when vouchers numbered 438 and 440 to 443 inclusive, amounting to \$56.84 and \$564.08, were audited and approved. The report was accepted.

Vital statistics committee.

The committee on vital statistics (Dr. B. Lee, chairman) stated that Dr. Hoppin, of the prothonotary's office of Philadelphia, reported that 362 physicians had registered in Philadelphia during the year ending July 1. The names of sixteen physicians who had died in the city in the same period were also given.

The committee also presented a copy of the coroner's certificate respecting the body of a still-born child thrown into the Monongahela river at or near Mifflin township.

The report was accepted.

Preventable diseases committee.

The committee on preventable diseases, disinfection, and supervision of travel and traffic submitted a report, prepared by the president, Dr. Groff, being a circular on sunstroke, which had been submitted to Dr. H. C. Wood, of Philadelphia, for revision, and was recommended to be published in a leaflet form.

The report was accepted.

School hygiene

No report being forthcoming from the committee on school hygiene, the secretary was directed to request from the chairman (Dr. J. H. McClelland) the return of circular on school buildings, in order that the same might be published.

Sanitary legislation committee.

On behalf of the committee on sanitary legislation, rules and regulations, Dr. B. Lee reported that House bill 635, for the appropriation to the Board, had been amended and the sum of \$6,000.00 allowed per annum for the next two years. A bill to prevent the drainage of cemeteries contaminating the water supplies of cities of the first class; and a bill to prevent contamination of water by abandoned oil and gas wells had also been passed during the last session.

Election of president for the ensuing year.

Nomination and election of a president for the ensuing year being in order, Dr. Lee moved and Dr. Davis seconded the nomination of Dr. J. H. McClelland. The vote

was taken by ballot and resulted unanimously in favor of Dr. McClelland, who was declared duly elected for the ensuing year.

New business being in order, the question whether landlords or their agents were to be communicated with in case of nuisances was called up. The Board decided that notices be sent in such cases to landlords.

In the matter of a charge for burial permits at Lancaster, the secretary was directed to look into the question and satisfy himself as to the existence of laws and ordinances conferring that power upon the local board, and to acquaint the local board with his decision.

It was ordered that the circular on disinfection at the quarantine station be incorporated in the annual report.

Accounts, vouchers numbered 438 and 440 to 453, amounting to \$56.84 and \$564.08, which had been audited by the executive committee, were submitted to and approved by the Board.

The matter of holding a series of local conventions in place of one annual sanitary convention was brought up by Dr. P. Dudley and discussed, but no action was taken thereon.

The Board then adjourned.

BENJAMIN LEE,
Secretary.

New business

Nuisance notices.

Charge for burial permits.

Circulars on disinfection.

Accounts approved

Sanitary conventions.

Adjournment.

Special Meeting, August 31, 1891.

A special meeting of the Board was held at the executive office, at 12 o'clock on Monday, August 31, 1891.

Present, Dr. George G. Groff in the chair, Drs. Edwards, Dudley and Lee.

The secretary presented accounts, vouchers numbered 439 and 454 to 466, amounting to \$460.28, which had been audited by the executive committee and found correct. They were on motion approved.

A telegram from Dr. S. T. Davis, stating that he was unable to be present was read by the secretary. The secretary stated that the president, Dr. J. H. McClelland, was absent in Europe.

The secretary announced the death of Dr. C. L. Gummert, medical inspector for the Southern Tier District, and nominated Dr. J. S. Hackney, of Uniontown, president of the Fayette County Medical Society, to fill the vacancy thus created. Dr. Dudley seconded

Special meeting.

Presentation of accounts.

Death of Dr. C. L. Gummert.

Nomination of Dr. J. S. Hackney.

the nomination, which was carried unanimously, and Dr. Hackney was declared elected medical inspector for the Southern Tier District.

Preserved milk as food.

A communication from a citizen of Germantown, on the deleterious qualities of chemically preserved milk, accompanied by advertisements of milk preservatives cut from the Germantown newspapers was read. After discussion, it was resolved that the matter be referred to the committee on adulterations, poisons, etc., with instructions to report on the same at the forthcoming meeting of the Board in November.

Pollution of the river Brandywine.

A complaint had been received from the Delaware State Board of Health that the waters of the Brandywine river were being polluted by dead hogs and the drainage from two creameries at Cossart Station and Chadd's Ford in Chester county, Pennsylvania, where a large number of hogs were kept. The secretary, with the medical inspector of the district, investigated the complaint, which was fully confirmed as regards the creamery at Chadd's Ford. Notices had been sent to the parties requiring them to abate these nuisances forthwith, which notices were being duly carried out. The action of the secretary was approved.

Pollution of streams legislation.

In regard to the pollution of streams in Pennsylvania, the secretary pointed out the advisability of asking congress to pass a law prohibiting the pollution of all streams, the waters of which flowed from one state into another. This would affect a majority of the most important streams in the United States. The Board appointed a committee consisting of Drs. Groff, Dudley and Lee to investigate and report on this subject.

The Board then adjourned.

BENJ. LEE,
Secretary.

Special Meeting, October 24, 1891.

Special meeting,
Oct. 24, 1891.

A special meeting of the Board was held Saturday, October 24, 1891, at 2 p. m., at the office of Dr. William B. Atkinson, medical inspector for the Delaware district, to consider the subject of the drainage of the Devon Inn. Present, Dr. Samuel T. Davis, Dr. J. F. Edwards, Dr. George G. Groff, Mr. Howard Murphy, C. E., and Dr. Benjamin Lee.

The secretary moved that in consequence of the absence of the president, Dr. J. H. McClelland, who was still in Europe, Dr. Samuel T. Davis take the chair. It was carried.

Mr. Howard Murphy moved that the reading of the minutes be dispensed with. It was carried.

There were present by invitation Messrs. Coffin & Altemus, owners of the Devon Inn; Mr. J. H. Crump on behalf of the lessees; Mr. Paist, general manager, and Mr. William Waddell, attorney; Mr. C. Davis English, the principal complainant; Dr. Henry Leffmann, analyst, and Medical Inspector William B. Atkinson.

In introducing the subject to the meeting, the secretary stated that the drainage of the Devon Inn was first complained of in a verbal communication by Mr. C. Davis English during the absence of the secretary at Johnstown, where he was compelled to spend the entire summer superintending the work of sanitary relief of that city. The date of this visit by Mr. C. Davis English, was June 28, 1889. He begged leave to submit the following documentary history:

1. December 6, 1889. Letter from Mr. Murphy to the secretary, enclosing the record of the regular meeting of the Engineer's club, of Philadelphia, held November 16, 1889, at which the Rimmer oxidizer was subject to numerous critical tests, and appeared to work satisfactorily.

2. Copy of above-mentioned record.

3. May 23, 1890. Letter from Mr. Howard Murphy to the secretary enclosing a letter to Messrs. Coffin and Altemus, stating that they had not kept their pledge, that the purification system should be in full operation before the spring opening of the hotel, and urging the immediate fulfillment of their promise.

4. Same date. Copy of letter of Mr. Murphy to Messrs. Coffin & Altemus above referred to.

5. June 10, 1890. Letter from Mr. Murphy to the secretary, stating that the plant was nearly completed and requesting the Board to inspect it.

6. June 16, 1890. Letter from General Russel Thayer to secretary postponing the visit of inspection.

7. June 27, 1890. Report of the secretary of the inspection of the plant of the Devon Inn by the Board, declaring that the purification was not yet sufficient, but suggesting that time be given to allow the apparatus to be brought into complete working order.

8. July 1, 1890. Letter from Mr. Murphy to the secretary, suggesting that samples of water be taken from a number of points and subjected to analysis.

9. July 2, 1890. Letter from Mr. C. Davis English to the secretary, thanking the Board for its intervention and the resultant benefit.

10. July 17 and 26, and September 19, 1890. Letters from Mr. Murphy to the secretary in reference to analysis.

11. September 23, 1890. Report of analysis made by Dr. Henry Leffmann, showing the effluent to be impure.

12. September 29, 1890. Letter from Mr. Murphy to the secretary stating that as the nuisance has not been satisfactorily abated, Dr. Atkinson be instructed to make another inspection.

13. October 2, 1890. Letter of Mr. Murphy to the secretary, on pollution of streams.

14. October 13, 1890. Letter from Mr. Murphy to the secretary, on pollution of streams and Dr. Atkinson's inspection.

15. July 15, 1891. Report of inspection of plant by Medical Inspector Atkinson.

16. August 4, 1891. Letter of the secretary to Messrs. Coffin & Altemus, stating that the purification of the sewage is incomplete and unsatisfactory and insisting on active measures being taken to improve it.

17. August 13, 1891. Letter from Messrs. Coffin & Altemus, stating their readiness to comply with the instructions of the Board and asking the favor of a personal interview with the secretary.

18. August 14, 1891. Report on inspection by Dr. Atkinson, stating that although some improvement has been made, the discharge at the mouth of the effluent pipe is still offensive.

19. August 29, 1891. Report of an inspection by Dr. Atkinson showing improved disposition of the sludge.

20. August 19. A conference took place at the executive office between the secretary and Medical Inspector Atkinson, representing the Board, and Mr. Coffin and Mr. Paist representing the inn, at which it was agreed that the various wells should be cemented, the sludge composted, and the filtration perfected.

21. August 25, 1891. Report of analysis of samples of water taken from twelve different points made by Dr.

Charles M. Cresson, showing serious pollution of the stream by the effluent.

22. September 25, 1891. Dr. Leffmann again takes sample of water.

23. September 26, 1891. Letter from Mr. C. Davis English, requesting that the Board take measures to close the hotel.

24. September 26, 1891. Letter from Mr. Murphy to the secretary, stating his doubts as to the possibility of purifying the drainage of the inn by the present system even if enlarged.

25. September 28, 1891. Letter to the secretary from Mr. Murphy enclosing report of analysis made by Dr. Leffmann, showing the effluent to be very foul.

26. October 9, 1891. Report of an inspection of the plant and stream made by Mr. Murphy, Medical Inspector Atkinson and the secretary, showing that although certain abuses have been remedied, the purification is very imperfect.

27. October 17 and 19 letters from Mr. Murphy with regard to special meeting.

This completed the presentation of the subject, and the secretary then moved that Mr. C. Davis English, the principal complainant, being present, be allowed to present his views. It was carried. Mr. English then made a brief statement in which he claimed that the matter had now been under consideration by the Board for two years, that in the meantime two deaths had taken place on his property, one from typhoid fever and one with typhoidal symptoms, presumably due to the pollution of this stream by the drainage from the hotel; that in consequence of these facts he could neither occupy his residence himself nor rent it to any one else, and that he therefore had a right to demand that decisive action should be taken by the Board to abate this nuisance.

Mr. Howard Murphy considered that the question was as to the right of Messrs. Coffin & Altemus, or any other person or persons, to pollute a stream of this commonwealth.

Mr. Coffin being called upon, stated that the owners of the inn were as earnestly desirous as any one present to remedy the trouble, and were ready to carry out any suggestions which the Board would be good enough to make for this purpose. The suggestions of the secretary

of the Board as to disposal of sludge and cementing of wells had been and were being faithfully carried out.

Mr. Paist said that last year the filtration was not as successful as during the present, in consequence of the dishonesty of an employé, but this abuse had now been corrected.

Mr. Crump stated that as the Board ordered the owners of the inn not to allow polluted water to enter this stream, he felt that it was incumbent upon the Board to suggest what additional methods should be adopted.

Mr. English considered that the onus was not upon the Board, and the secretary sustained this opinion, stating that he had just received an opinion from the Attorney General of the state, which held that the Board was under no obligation to suggest the means for carrying out its orders for abatement.

Mr. Waddell called attention to the fact that the State Board of Health had jurisdiction only over public nuisances, while the complaint of Mr. English was of a private character.

The secretary replied that Mr. English was only one of ten complainants, and that the Board was careful to avoid receiving complaints of private nuisances which were often merely quarrels between neighbors.

In answer to an inquiry from the chairman, Mr. Coffin stated that the proprietors of the inn had already spent \$10,000 upon this matter, and stood ready to spend \$10,000 more if necessary. No effort should be spared which engineering skill could suggest to make the water in the stream as pure below the plant as above it.

Dr. Leffmann threw out the suggestion that the addition of a different system of purification and filtration to the present one would give better results than the enlarging of the present, and further considered it important that all old drains, which must be saturated with filth, be dug up and exterminated.

The secretary then moved that as the subject had been fully discussed, the Board now go into executive session. It was carried.

On motion of Mr. Murphy, the following resolution was adopted:

Resolved, That the secretary be instructed to notify Messrs. Coffin & Altemus to immediately proceed to take measures to ensure the complete purification of the effluent of the sewage and drainage system of the Devon

Inn and its associated cottages, and to take up and remove the old abandoned drain and fill in the excavations thus produced with fresh, clean earth and quicklime; and that he be further instructed, in the event of their failure to comply with these requirements, so that the improved system shall be in good working order and ready for the inspection of the Board by April 15, 1892, or one full month before the opening of the Devon Inn in the spring of 1892, to proceed against the said Messrs. Coffin and Altemus according to law.

On motion, the Board then adjourned.

BENJAMIN LEE,
Secretary.

Regular Meeting, November 12, 1891.

The twentieth regular meeting of Board was held at the supreme court room, Harrisburg, November 12, 1891, at 4 p. m.

Twentieth regular meeting.

Present, Dr. J. F. Edwards, Dr. Pemberton Dudley, Dr. Geo. G. Groff, Mr. Howard Murphy, C. E., and Dr. Benjamin Lee, secretary.

Dr. Lee moved that in consequence of the absence of the president, who was still in Europe, Dr. J. F. Edwards take the chair. The motion was carried.

Absence of members.

The secretary read a telegram from Dr. S. T. Davis regretting his inability to attend.

The minutes of the nineteenth regular meeting, held at Harrisburg, July 9, 1891, were read and approved. The minutes of special meetings, held at Philadelphia, August 31, 1891, and October 24, 1891, were also read and approved.

Approval of minutes.

1. The report of the secretary being in order, as its first item, the secretary read his seventh annual report. It was accepted and approved with the thanks of the Board, and, in conjunction with the minutes of the Board for the past year, ordered to be forwarded to His Excellency, the Governor, as the annual report of the Board.

Secretary's report.

Seventh annual report.

The recommendations occurring in the course of the report were ordered to be brought up under the head of new business.

The Board now adjourned to meet at the supreme court room at 8 o'clock p. m.

Intermission.

The Board reconvened at 8:30 o'clock the same evening. The report of the secretary still being in order, the following items were presented:

Issuing of new circulars.

2. The precautions against sunstroke had been printed and partially distributed since the last regular meeting. Also Circular No. 33, "School Hygiene No. 2," on construction, ventilation and management of schools, addressed to school directors, controllers and trustees. The chairman of the committee on water supply, drainage, sewerage, topography and mines had handed the secretary a newspaper extract from a recent report of the French Academy of Medicine, stating the length of time during which patients recovering from contagious diseases were liable to communicate these diseases. The periods assigned agree closely with those fixed in this circular, in no instance being longer, but in certain diseases being shorter.

Length of quarantine of contagious diseases.

Diphtheria at Glen Riddle.

3. A report of the prevalence of diphtheria at Glen Riddle, Delaware county, had been made to the Board. After investigation Medical Inspector Atkinson reported cases at the railroad station. There had been several previous cases of sickness in this house, the sanitary conditions of which were found to be very imperfect. There was evidence of leakage from the walls into the cellar, and the drainage from the roadway passed under the kitchen floor, the level of which was below that of the road. The general manager of the railroad company had written promising that no steps should be spared to properly disinfect the house, and rearrange its drainage.

Defective drainage at Weissport.

4. A complaint that owing to defective drainage, stagnant water from a canal bed filled cellars and thus caused much sickness and damage to property at Weissport, Carbon county, had been made by several citizens of that borough. A communication was addressed to the president of the Lehigh Coal and Navigation Company. This officer while considering that the nuisance was principally caused by parties having placed a dam across the Lehigh river at this point, promised to open a drain and thus prevent this leakage from the canal bed.

President's commission as delegate to International Congress on Hygiene and Demography.

5. At the request of the secretary, His Excellency, the Governor, has issued a commission appointing the president of the board, Dr. J. H. McClelland, a delegate from the Commonwealth of Pennsylvania to the International Congress on Hygiene and Demography to be held in London on August 7-14, 1891. The secretary has also issued Dr. McClelland credentials from this Board to the same body, and had notified Dr. John S. Billings, of Washington, D. C., and Prof. W. H. Corfield, honorable foreign secretary of the congress of such appointment.

The action of the secretary in this matter was referred to new business.

6. The attention of the Board had been drawn by Mr. R. R. Bentley, general baggage agent Pennsylvania system west of Pittsburgh, to the action of the Ohio State Board of health, who had recently prohibited the transportation of bodies dead of diphtheria. The Iowa State Board of health had previously taken similar action. It was for the Board to decide whether it should amend its regulations in the same way. The matter was referred to new business.

Transportation of
bodies dead of
diphtheria.

7. An investigation into the cause of typhoid fever at Millville, Columbia county, had disclosed the fact that a spring at the bottom of a hill near the residence of a physician, was being contaminated by cesspool matter from a disused well on his premises used as a cesspool. The cases of sickness had occurred among train hands and others who had drunk from this spring, which the secretary at once ordered closed, in accordance with the recommendation of Dr. Leiser, medical inspector.

Typhoid fever at
Millville.

The subject of the increasing use of disused wells as cesspools throughout the state, was ordered to be brought up under new business.

Disused wells as
cesspools.

8. A complaint that scarlet fever prevailed at Shippenburg, Cumberland county, had resulted in an inspection of that borough by Medical Inspector Sibbet. He reported about fifty cases of scarlet fever, also several cases of typhoid fever. He found the borough in a bad sanitary condition. He had attended a meeting of citizens and urged the necessity of abating the privy nuisance by the purchase and use of an odorless excavator, the free use of disinfectants, the appointment of a sanitary committee, the abatement of pig pen, stable and slaughter house nuisances, and the closing of all wells within one hundred feet of any such places. He had also caused hand bills to be issued containing the above suggestions. The secretary had communicated with the burgess, fully endorsing all these recommendations.

Scarlet fever at
Shippenburg.

9. Diphtheria had again prevailed somewhat seriously at Bangor, Northampton county, six cases out of eight having terminated fatally. Circulars were sent, and suggestions made to the board of health, which were suitably acknowledged by Dr. Buzzard, the president.

Diphtheria at
Bangor.

10. The board of health of Carbondale had complained recently of their inability to enforce the sanitary laws of that borough, especially in regard to drainage, and asked

Drainage of Car-
bondale.

for advice. The secretary instructed Medical Inspector Taylor to visit Carbondale and confer with the board. He reported great progress in sanitary matters since his visit in 1888, brick pavements having been laid in the center of the town, and about 16,000 feet of sewers having been constructed. The great need of the city was a complete system of sewerage. The secretary had written to the board of health pointing out that the power to order the sewerage of a city, and to provide the necessary appropriations, were vested solely in councils; also endorsing the recommendations of the medical inspector.

Defective drainage
at St. Clair.

11. Information had been received from one of the physicians of St. Clair, Schuylkill county, to the effect that a nuisance was being created by a blocked up sewer. The secretary notified the borough authorities of the matter, and a reply was returned that the nuisance should receive speedy attention.

Creamery and tan-
nery nuisance at
Nicholson.

12. A complaint that filth from a tannery and a creamery was being run into Martin's creek, at Nicholson, Wyoming county, had been received, and was investigated by Medical Inspector Taylor. He found that the nuisance had been partially abated since the report had been sent to the Board. He, however, suggested that the pipe from the creamery be lengthened and that the liquid in which the hides are soaked at the tannery be emptied into Tunkhannock creek, about three eighths of a mile away. The secretary wrote advising these suggestions to the owners of the creamery and tannery, who promised that prompt attention should be given the matter.

Typhoid fever at
Cressona.

13. A communication from the Hon. L. R. Keefer requested an investigation into the cause of typhoid fever at Cressona, Schuylkill county. Dr. W. Murray Weidman had inspected Cressona, and found ground for suspicion that several of the wells were polluted. He had conferred with the committee appointed to investigate, and had submitted several of the suspected waters for analysis, advising the closing of every well the waters of which were found contaminated. An analysis of seven different samples was made under the direction of the Board, showing serious contamination of certain wells, which were ordered closed. Eventually the epidemic was brought under control.

Creamery nuisance
at Bulger.

14. The continued obstinacy of Mr. Peter Hermes, of Bulger, Washington county, to abate the nuisance at his

cheese factory had caused the secretary to threaten him that legal proceedings would be instituted. He had replied denying that any nuisance existed, his letter to this effect being now read. In the event of his failure to comply with the Board's orders the secretary had advised him that the district attorney would commence proceedings.

15. The secretary's attention had been called to the fact that a portion of Camp Sherman at Devon had been located on marshy ground near a contaminated water course. This had been pointed out to the commanding officer, and that portion of the camp was promptly removed to higher ground. A complaint was received shortly after the close of the encampment that large quantities of garbage and cesspool matter had been left exposed and were creating a serious nuisance. On inspection the secretary and Dr. Atkinson found that all this matter had been, just before their visit, covered with fresh earth, and no cause for further complaint existed.

Insanitary location
of Camp Sherman.

16. At the request of Mr. Frank Smith, the secretary and Medical Inspector Atkinson had inspected the new sewerage system of Wayne, Delaware county, on August 8. They were accompanied by Col. Waring. The system, which might be termed one of filtration and aeration, did not appear to be working perfectly, but it was claimed that all impure matter was separated from the small amount of water which entered Itham creek, and it was expected that this entrance would soon cease entirely.

Sewerage system of
Wayne.

17. An epidemic of dysentery had prevailed at the Norristown State Insane Asylum during the past summer. On request Dr. Robert H. Chase, superintendent, made a report showing forty-two cases had occurred, of which thirty-seven had recovered, three had died, and two more were still under treatment. The disease had been confined, with the exception of two cases, to the insane inmates of the asylum. The cause of the dysentery was not definitely discovered, it was, however, most prevalent in the crowded parts of the institution. A deficiency in the water supply had also occurred, interfering with the proper flushing of the closets.

Dysentery at the
Norristown Insane
Asylum.

18. The members would recall the fact that a complaint was received during the last meeting of the prevalence of typhoid fever at Bitnerville, Lancaster county, and that an investigation was ordered. Medical Inspector Hartman reported that the cesspool matter from nineteen cottages

Typhoid fever at
Bitnerville.

was carried into an open trench about eighty yards back, where it remained, the stench from this trench being most offensive. He recommended that the owner (Mr. Bitner) cover this trench, and provide properly constructed cesspools for these cottages, which the secretary advised Mr. Bitner to have done. Subsequently, on notice from the complainant, Dr. S. T. Davis made two further inspections of the place, and reported that the neglected matter had been attended to by Mr. Bitner, and no further cause for investigation by the Board was needed.

Slaughter house
nuisance at Tully
town.

19. A nuisance caused by a slaughter house at Tullytown, Bucks county, had been investigated by Medical Inspector Atkinson. He reported everything around the slaughter house in a very unsatisfactory condition; pigs fed on offal and blood; no drainage whatever, and foul odors constantly arising from the place. He recommended the removal of the place outside Tullytown, which the secretary at once ordered. Subsequently the owner and tenant of the premises waited upon the secretary and agreed in a sworn affidavit to cease feeding hogs on offal and blood, to cement the floor, remove the pig pen, and clean up the entire premises if allowed to remain. On these terms the secretary allowed the slaughter house to remain.

Intermission.

The Board then adjourned to meet at 9:30 a. m. on the 13th inst.

The Board reconvened at 9:30 a. m. on Friday the 13th instant; the secretary's report was continued as follows:

Inspection of
Washington.

20. Application had been made by prominent residents of Washington, Washington county, for assistance in the formation of a local board of health. Medical Inspector Thompson was instructed to visit the town and confer with the petitioners. He reported Washington to be well sewered and supplied with ample water works. Only one-fourth of the people had, however, begun to use this water. There was much fear of contamination of wells from cesspools. Nine cases of typhoid fever were reported. Documents for establishing a local board were sent to the citizens, and the entire discontinuance of the use of well water was strongly urged.

Diphtheria at
Lenni.

21. A complaint that diphtheria was prevalent at Lenni, Delaware county, was investigated by Medical Inspector Atkinson. He reported that little ground for complaint existed, diphtheria being but present in one instance. Two cases of typhoid fever existed. A re-

ported stagnant pond was found to be fed by a spring and to have two outlets, and did not appear to be the cause of any sickness. The teachers and directors of the schools were seen, and all agreed that they had no cause for complaint.

The nuisances at Riddle's Mills, however, reported during the previous epidemic, had not been remedied, and the secretary had urged the owners to give the subject immediate attention.

22. On request of citizens, Dr. L. H. Taylor had made an inspection of Forest City, Susquehanna county. He reported finding the city in a most deplorable condition as regards sanitation. The filth from the privy vaults and house drains in hundreds of instances ran down through the yards of houses situated on lower ground. There was no system of sewerage whatever, the drainage from privies running into open gutters in the streets, in many places this accumulated and remained stagnant, producing noisome stench. In some few instances where privy vaults were found they were full to overflowing, and nuisances were abundant everywhere. No successful attempts had been made by council to abate these nuisances. From fifteen to twenty cases of typhoid fever had existed in two months. The secretary had strongly pointed out the dangers of this wretched condition of affairs to the council, and endeavored to dissuade that body from allowing political questions to interfere with their duties as regards sanitation.

Inspection of Forest City.

23. The board of health of Schuylkill Haven had asked for the co-operation of the Board in removing certain dangerous nuisances in that borough. Medical Inspector Weidman had inspected the localities complained of. The secretary had advised the local board in accordance with Dr. Weidman's recommendations, and the board had undertaken to carry out the suggestions.

Nuisances at Schuylkill Haven.

24. In consequence of information from the burgess of Tyrone, Blair county, respecting the prevalence of diphtheria, Dr. Groff had visited that borough, and had conferred and advised with the burgess and other prominent citizens. The secretary had also communicated with the burgess recommending the ordinance requiring physicians to report all cases, the issuing of a proclamation, the distribution of circulars and placarding of infected houses. The progress of the epidemic was checked.

Diphtheria at Tyrone.

25. Information had been received from Police Surgeon

Scarlet fever at
Howelville.

Andrews, of Philadelphia, that scarlet fever prevailed at Howelville, Chester county. This was investigated by Medical Inspector Atkinson. He reported many nuisances, especially caused by filthy immigrants. The Pennsylvania Railroad Company, the owner of the quarry works and others, were written to and urged to co-operate in remedying these insanitary conditions.

Offensive manure
at Ardmore.

26. The deposit of large quantities of offensive and putrefying manure at Ardmore Station, Pennsylvania railroad, had been urgently complained of by a prominent physician. The secretary had communicated with the railroad company, advising that the transportation of the manure be either postponed until cold weather, or that some other point be selected for its deposit, with the result of the immediate cessation of the grievance.

Defective sewerage
of Wallingford.

27. A serious condition of affairs resulting from the pollution of the subsoil by drainage and sewerage had been reported at Wallingford, Delaware county. The inspection by Dr. Atkinson revealed the fact that the ground was saturated with sewerage matter in all directions, every man draining on to his neighbor's property, or into his neighbor's well. Owing to the action of the secretary the nuisance complained of (which led to the discovery of this condition) was being promptly abated, but unless this deplorable absence of all sanitary provisions were remedied in this as in other suburban districts, he apprehended grave results in the near future. In this case four inspections had been made. By his advice the residents were uniting to form a sanitary protection association, and adopt regulations regarding drainage and other matters affecting the health of the neighborhood. He would suggest the issue of a circular recommending the formation of such associations throughout the state.

Referred to new business.

Pollution of Lebanon
water supply.

28. A complaint that the water supply of Lebanon was being polluted had been investigated by Medical Inspector W. Murray Weidman. He found possible cause for contamination from the fæces of workmen who were constructing the dam where it was alleged the pollution occurred. The results of the inspection were sent to the complainants, who were the publishers of a daily newspaper in Lebanon.

Malarial fever at
Shanksville.

29. A report of the prevalence of typhoid fever at Shanksville, Somerset county, asking for an inquiry into the cause of so much sickness resulted in Medical Inspec-

tor J. S. Hackney being instructed to inspect the town. He reported the sickness to be malarial, and not true typhoid fever, due to deficient drainage and general filth, and suggested several sanitary measures which were recommended by the secretary to the burgess.

30. A complaint had been made of the prevalence of typhoid fever in Montrose, Susquehanna county. Medical Inspector Taylor, on inspection, was unable to verify the complaint in the main, but found several minor nuisances. He also suggested the pressing need of a pure water supply for the city. The secretary had pointed out these needed reforms to the burgess, advising that if a pure water supply could not speedily be introduced, earth closets should be substituted for privies throughout the entire town, as under the present system the pollution of all the wells was only a question of time. The burgess was evidently disposed to do all in his power to promote sanitary measures.

Inspection of Montrose.

31. On the receipt of documents and advice from the secretary a local board of health had been established at Canonsburg, Washington county.

Formation of board of health at Canonsburg.

32. The advice of the Board had been sought with regard to diphtheria at Galeton, Potter county. Circulars and an advisory letter had been sent by the secretary, which had been gratefully acknowledged.

33. The attention of the Board had been drawn by a physician to a badly polluted well suspected of having caused deaths from typhoid fever at Sheridanville, Allegheny county. The complaint was accompanied by the analyst's report fully confirming these suspicions, and the secretary immediately ordered the well closed.

Closing of polluted well at Sheridanville.

34. A complaint of the prevalence of diphtheria at Nazareth, Northampton county, and a request for assistance had been received from a physician. The secretary at once sent a supply of circulars of the Board with instructions for preventing the spread of the disease.

Diphtheria at Nazareth.

35. A complaint had been received from a member of the board of health of Butler, Butler county, that typhoid fever was epidemic in that borough, asking for assistance. Medical Inspector Thompson reported the sickness to be caused by drinking water from contaminated wells on the south side of the town, which had not yet been supplied with water works. From seventy to eighty cases of fever were said to exist. He recommended the erection of a small garbage furnace, and the establishment of

Typhoid fever at Butler.

a local board of health. The secretary had sent documents for this purpose, and had urged the closing of every well suspected of being polluted. Also the extension of water works to the southern part of the town.

Typhoid fever at
Beaver Meadows.

36. On receipt of a complaint that typhoid fever was epidemic at Beaver Meadows, Carbon county, the secretary urged that committees be formed by the citizens, and a house-to-house inspection made of the town. Survey blanks for this purpose were sent. From the low rate of mortality the secretary thought the sickness was rather of a malarial character than true typhoid fever.

Diphtheria at Heck-
scherville.

37. Diphtheria had prevailed at Heckscherville, Schuylkill county. The secretary had sent circulars and advisory letter.

Typhoid fever at
Rochester Mills.

38. A complaint of typhoid fever at Rochester Mills, Indiana county, had been investigated by Medical Inspector Matthews. He attributed the disease to the use of water from contaminated wells, and suggested that a well be dug for the use of the people above the town. He also advised that an analysis be made. The secretary ordered three demijohns sent at once, but no reply had yet been received.

Disposal of sewage.

39. A letter was read from an engineer of Pittsburgh, requesting the secretary's advice with regard to the disposal of the sewage of a town on the Beaver river, not far below which was a dam which might supply the drinking water for a small village. He had replied, stating that the parties owning the dam referred to could take legal proceedings in the event of the sewage being emptied into the river whether it were used as a water supply or not. He further advised the inquirer, in any event, to make ample provision for the purification of the effluent before it entered any stream. Circular No. 30 was also sent.

Complaints of
minor nuisances

Complaints of minor nuisances had been received from

40. Fryberg, Clarion county.
41. Rosemont, Montgomery county.
42. Ligonier, Westmoreland county.
43. Leechburg, Armstrong county.
44. Troy, Bradford county.
45. Fredonia, Mercer county.
46. McKees Rocks, Allegheny county.
47. Haverford College, Montgomery county.
48. Coopersburg, Lehigh county.
49. Wrightsville, York county.

50. Bolivar, Westmoreland county.

51. Rankin Station, Allegheny county.

52. Port Providence, Montgomery county.

In each case the necessary number of signatures and the affidavit required had not been forwarded.

33. The financial report showed the receipts during the year to have been \$3,582.20, and the disbursements \$3,582.05, of which \$1,654.28 was for incidental expenses of the secretary and office, and the remainder for traveling expenses of members, inspections, analyses, vaccine virus and sanitary convention.

Financial report.

54. The number of written communications sent since the last annual meeting had been 1,777, and the number received 1,794.

Communications received and sent.

55. The total number of circulars distributed during the same period had been 20,503. Number of boxes of complete sets of circulars, 926.

Circulars distributed.

56. The additions to the library had been of books received as exchanges and donations, 92; purchased, 6; of pamphlets received, 34.

Additions to library.

The report of the secretary was now accepted and referred for publication.

Reports of standing committees being in order, Dr. Pemberton Dudley, chairman of the executive committee, reported that since the last regular meeting of the Board, two regular meetings and one special meeting had been held.

Reports of standing committees.

At the regular meeting held August 31, voucher 439, and vouchers numbered 454 to 466, amounting to \$696.35, were examined and approved.

Executive committee.

At the special meeting held September 21, vouchers numbered 467 to 484, amounting to \$696.35, were examined and approved.

At the regular meeting held November 12, vouchers numbered 485 and 486, amounting to \$303.54, were examined and approved.

The report was accepted.

Dr. Benjamin Lee, chairman of the committee on vital statistics, reported that the register of physicians published by the Board, as was expected, had met with considerable criticism.

Vital statistics and registration.

It was proposed, in order to secure accuracy in the next register, to assign the duty of examining and transcribing the registers in the offices of the various prothonotaries to the Board's medical inspectors, with clearly defined instructions as follows:

Each inspector to examine the records of the counties within his own district, with instructions to omit from his returns the names of persons deceased, removed or declining practice, and to make special reference to all persons whose registration appears to have been in any way irregular.

The report was accepted.

Preventable diseases, etc.

Dr. J. F. Edwards, chairman, committee on preventable diseases and supervision of travel and traffic, stated that he had no written report to present, his committee reporting every month such matters under its observation through the "Annals of Hygiene," of which he was the editor.

The statement was accepted.

Water supply, drainage, sewerage, topography and mines.

The report of the committee on water supply, drainage, sewerage, topography and mines was made by the chairman, Mr. Howard Murphy, C. E., and was devoted to the question of drainage of the Devon Inn. It urged in the strongest manner the importance of the insistence on the part of the Board on the complete purification of the effluent of the drainage of the Inn before it is permitted to enter the stream in question, considering the question to be one, not simply of local or individual interest, but affecting almost every water supply in the commonwealth.

The report was accepted.

Public institutions and school hygiene.

The report of the committee on public institutions and school hygiene was presented by Dr. George G. Groff, chairman. It described the distribution of the two circulars on school hygiene, the latter of which, prepared for the instruction of school trustees and controllers, had recently been prepared and the delivery of twenty-five lectures to teachers, school directors and farmers' institutes on the importance of better sanitary conditions in homes, schools, churches and public institutions. The report drew especial attention to the following evils in schools: Insufficient lighting, overwork, the spread of contagious diseases through carelessness in sending convalescents from these diseases to school while still in an infective condition; the abolition of a recess, and the absence of any proper medical and sanitary supervision of schools. Reference was also made to the lack of proper sanitary precautions in the establishment of new summer resorts, the deficient ventilation of churches, and the dangers of holding public funerals in cases of death from

contagious diseases. The committee felt that on the whole improvement was being made in the matter of the construction of schools and other public buildings, as also in the heating, ventilation and plumbing of the same.

The report was accepted.

Dr. Dudley, chairman of the committee on adulterations, poisons, explosives, and other special sources of danger to life and limb, reported verbally: That an investigation was being made by the committee into the subject of the use of chemical preservatives for milk, but that it had not yet reached a point where it was deemed advisable to make any of its results public.

Adulterations, poisons, etc.

In the absence of Dr. Samuel T. Davis, chairman of the committee on sanitary legislation, rules and regulations, Dr. Benjamin Lee reported a list of all the bills passed in the last session of the legislature relating to sanitary matters.

Sanitary legislation, etc.

The report was accepted as the report of the committee with the understanding that Dr. Lee's name appear together with that of Dr. Davis appended to the report.

Reports of special committees:

The chairman of the committee on a national rivers conservancy commission (Dr. S. T. Davis) not being in attendance, no report was presented.

Reports of special committees

Dr. Pemberton Dudley moved that with regard to the appointment of standing committees for the ensuing year that the committees stand the same as last year, except that Dr. Groff's name be substituted for that of Dr. McClelland as chairman of the committee on public institutions and school hygiene, and for that of the same gentleman as member of the committee on water supply, drainage, sewerage, topography and mines.

Appointment of standing committees.

The motion was carried and the committees therefore stand as follows:

Executive Committee—Pemberton Dudley, M. D., chairman; Howard Murphy, C. E., Joseph F. Edwards, M. D., and Benjamin Lee, M. D., secretary.

List of standing committees.

Committee on Registration and Vital Statistics—Dr. Benjamin Lee and Dr. Samuel T. Davis.

Committee on Preventable Diseases, Disinfection and Supervision of Travel and Traffic—Dr. Joseph F. Edwards and Dr. Pemberton Dudley.

Committee on Water Supply, Drainage, Sewerage, Topography and Mines—Mr. Howard Murphy, C. E., and Dr. George G. Groff.

Committee on Public Institutions and School Hygiene—Dr. George G. Groff and Mr. Howard Murphy, C. E.

Committee on Adulterations, Poisons, Explosives and other Special Sources of Danger to Life and Limb—Dr. Pemberton Dudley and Dr. Joseph F. Edwards.

Committee on Sanitary Legislation, Rules and Regulations—Dr. Samuel T. Davis and Dr. Pemberton Dudley.

New business.

New business being in order:

State sanitary convention.

It was ordered that the next state sanitary convention be held at Erie, Erie county, on such date during the latter part of February as the secretary may consider most suitable.

Committee of arrangements.

The following members were appointed as a committee of arrangements for the convention, with power to act, viz: Dr. Groff, chairman, with Drs. Lee and Dudley.

Presentation of accounts.

The secretary presented accounts, vouchers numbered 485 to 486, amounting to \$303.54, which the executive committee had audited and approved.

The accounts were approved.

Circular on management of dairy farms.

The secretary suggested that a circular on the "Sanitary Management of Dairy Farms," be prepared for distribution among farmers, dairymen, creamery proprietors, etc., and that a circular on this subject prepared by Dr. Russel, of Glasgow, Scotland, be taken as a basis for same.

The publication of such a circular was authorized.

Circular on prevention of blindness.

The secretary suggested that a circular, addressed to physicians and midwives, recommending measures for the prevention of blindness, as suggested in a communication received some time since from the Sydenham Medical Coterie of Philadelphia, be issued.

The suggestion was adopted.

Circular on sanitary protective associations.

Referring to the conditions described in the annual Report, as existing at Wallingford, the secretary proposed the publication of a paper read at the Lewisburg convention on sanitary protective associations.

The publication of such circular was ordered.

Adoption of model ordinance as a regulation of the board.

"The model ordinance for the better protection of life and health in cities and boroughs in this commonwealth," originally proposed by the Board as a guide to municipal corporations in framing their sanitary ordinances, was, on motion, unanimously adopted as a "regulation of the Board" to be enforced in all "cities, boroughs, districts and places having no board of health or health-offi

cers, or in case the sanitary laws or regulations in places where boards of health or health-officers exist should be inoperative" in accordance with the provisions of section six of the act of June 3, 1885, "to establish a State Board of Health," which declares that, in the places aforesaid or under the circumstances aforesaid, "The State Board of Health shall have power and authority to order nuisances or the cause of any special disease or mortality to be abated and removed, and to enforce quarantine regulations, as said Board shall direct."

In asking for the adoption of this regulation, the secretary stated that it had become necessary as the basis for prompt and definite action on the part of the executive officer, in the rural districts and small towns; the expectation of the Board when it was established that the state legislature would at once see the expediency of establishing local boards of health in such places, having been entirely disappointed.

The secretary presented a compilation of the acts passed by the last legislature in reference to the protection of life and health which he had classified and annotated, and moved that it be printed as "Appendix B" to the "Compendium of the Laws relating to Public Health and Safety of the State of Pennsylvania." It was carried. In the same connection the secretary stated that "Appendix A" to the compendium being out of print, he had annotated it, and suggested that a new edition be issued. It was so ordered.

Sanitary laws of
last legislature.

The pamphlet containing the constitution, by-laws and regulations of the Board was also stated to be out of print, and a new addition containing the regulation just adopted was authorized.

On motion of Mr. Howard Murphy, it was ordered, that the new edition of the constitution, by-laws and compendium of sanitary laws, including the two appendices, the names and addresses of the members and inspectors, the lists of committees and such other information as the secretary may consider pertinent, be bound together in one volume as a manual for the use of the board and its inspectors. It was carried.

Manual of the
board.

Dr. Dudley moved that a sufficient number of copies of such manual for the Board, its inspectors and heads of departments of the state government be bound in sheepskin, and the remainder in cloth for general distribution. It was carried.

Small-pox at Johnsonburg.

On motion of Mr. Howard Murphy, the secretary was instructed to transmit the thanks of the Board to the physicians and to the citizens of Johnsonburg, who so promptly, energetically, and generously assisted the Board in the emergency resulting from the outbreak of small-pox at Clarion Junction, and by such assistance contributed materially to the successful result which crowned the efforts of the Board.

Leprosy in Pennsylvania and the United States.

The subject of inadequate provision for lepers discovered in this state, referred from the annual report of the secretary, was then called up. Mr. Howard Murphy moved that in view of the evident lack of sanitary precaution and humane provision in regard to cases of leprosy in this state and in the United States, the secretary be requested to investigate the subject and report as to the appropriate measures for remedying this evil at the next regular meeting of the board; and, further, that he be authorized to communicate with the supervising surgeon general of the United States marine hospital service and with the President of the United States, urging the importance of bringing this matter before congress at an early date.

Transportation of bodies dead of diphtheria.

With reference to the communication received from the general baggage agent of the Pennsylvania roads west of Pittsburgh, and from the State Boards of Iowa and Ohio, calling attention to the fact that the boards of health of both of these states had considered it expedient to forbid the transportation of the bodies of persons dead of diphtheria in public conveyances, the board ordered regulation in regard to disinterment and transportation of dead bodies (No. 4, Regulation of Travel and Traffic), to be amended by inserting the word "diphtheria," after the words "typhoid fever," in rule 1 under the heading "transportation of bodies, so that said rule shall read "the transportation of bodies of persons who shall have died from small-pox, Asiatic cholera, typhus fever, diphtheria or yellow fever is strictly forbidden."

Abandoned canal beds in Pennsylvania.

The chairman of the committee on water supply, drainage, sewerage, topography and mines called up the subject of abandoned canal beds. On motion of Dr. Dudley, it was resolved that the chairman of this committee be directed to correspond with the companies or individuals owning or leasing the various abandoned canal beds or other abandoned waterways in this commonwealth, in order to obtain information as to their

present condition and effect on the public health, and authorized to make such inspections as he may consider necessary in order to obtain definite information in addition to that received from the owners, and is further directed to report on this subject at the next regular meeting.

The action of the secretary in issuing credentials to Dr. J. H. McClelland, president of the Board, as delegate to the International Congress of Hygiene and Demography in August last, and in obtaining from the Governor of the state a commission for the same gentleman to represent the Commonwealth of Pennsylvania at the same congress, was approved.

Credentials to the president.

On motion of the chairman of the committee on water supply, drainage, sewerage, topography and mines, it was resolved that this Board condemns in the strongest terms the practice which is now becoming a very common one in the smaller towns of the state of making use of abandoned drinking wells as receptacles for cesspool filth and other house drainage, and that in every instance in which the executive officer has reason to suppose that such disposition of filth and drainage is the cause of disease he be requested to use the authority of the Board to forbid its continuance.

Abandoned drinking wells as cesspools.

On motion of Mr. Howard Murphy, it was resolved that the members of the Board be at liberty to invite the medical inspectors of the Board, the members of other state and local boards of health, and such other persons as are interested in sanitary science, or whose presence may be of interest or benefit to the Board, to be present at any meeting of the Board.

Invitation to meetings.

On motion, the chairman of the several standing committees were authorized to incur such reasonable expense as may be necessary for the due prosecution of their work, and to forward vouchers for the same to the secretary.

Expenses of committees.

In view of the urgent need for improved means for disposing of house drainage in Forest City, as indicated by the report of Medical Inspector Taylor, the secretary was instructed to confer with the authorities of that place, advising that immediate steps be taken for providing the town with a proper system of drainage or sewerage as local circumstances appear to demand.

Disposal of sewerage in Forest City.

On motion of the chairman of the committee on water supply, drainage, sewerage, topography and mines, it

Appointment of engineer inspectors.

was resolved that two engineer inspectors be appointed one for the western, and one for the eastern part of the state; said engineer inspectors to receive the same compensation and to be invested with the same authority as the medical inspectors of the Board; and that whenever a report be made by an engineer inspector a copy of the same be transmitted to the medical inspector of the district in which the inspection was made as well as to the secretary, and when so requested to the chairman of any committee; it being understood that the committee on water supply, drainage, sewerage, topography and mines, shall be consulted in the appointment of such engineer inspectors, but that nominations for these positions shall be made in open meeting of the Board.

Payment for legal opinion.

Mr. Howard Murphy moved that the secretary be instructed to request Alfred Lee, Esq., to present a bill for his services in preparing the full and able opinion presented at this meeting on the subject of the pollution of streams in this state, and that a sum of not less than \$150 or more than \$250 be appropriated for this purpose.

It was carried.

Adulteration of butter.

On motion, the chairman on committee on adulterations, poisons, explosives and other special sources of danger to life and limb was instructed to obtain specimens of butter from leading dairies with a view of determining to what extent injurious materials are made use of for the purpose of coloring the same.

Subscription to journals.

On motion of Mr. Howard Murphy the secretary was instructed to subscribe for the *Engineering News* and *Engineering Record*.

Resolution with reference to proclamation issued by the Governor, as to Pennsylvania exhibits at the World's Fair.

The secretary presented a communication from His Excellency the Governor of the state, enclosing a proclamation calling upon all state officers to lend their assistance in making the exhibit of the State of Pennsylvania at the World's Columbian Exposition, to be held in Chicago, in the State of Illinois, and which is to be formally dedicated on the 12th day of October, A. D. 1892, and regularly opened to the public on the 1st day of May, A. D. 1893, one that will be a source of pride to every Pennsylvanian and a revelation to the world of enterprise, progress and unrivalled resources of the state, and requesting such officers as may wish to take part in said exposition to communicate at an early date with Benjamin Whitman, executive commissioner of the Board of World's Fair Managers of Pennsylvania, at his

office in the city of Harrisburg, in order that he may be enabled to learn their views and purposes on the subject, and to aid in making such arrangements as to space and location as well as secure the best results.

The secretary was on motion instructed to confer with the aforesaid Benjamin Whitman, executive commissioner, with the secretaries of the boards of health of other states, and with the secretary of the American Public Health Association, in order to obtain their views as to the best means of illustrating sanitary work, and as to the expediency of conjoint action between these bodies for this purpose; and the secretary was further authorized, in case the result of such correspondence should be the proposal of a conference between these bodies, to attend such conference as the representative of the Board.

Conference with
other boards.

The secretary stated that he had received the announcement of the opening and courses of instruction of the new laboratory of hygiene of the University of Pennsylvania, which would be equipped and ready for use on February 1, 1892.

This would be an occasion of great interest to the Board, and would afford an opportunity for the establishment of such relations between the two bodies as might accomplish most beneficial results for the cause of sanitary science in the state. He therefore proposed the following resolution, which was passed:

Resolved, That the Board has received with sincere satisfaction the formal announcement of the approaching opening of the laboratory of hygiene of the University of Pennsylvania, considering that it marks an era in the progress, not of science only, but of civilization in this commonwealth.

Resolved, That the secretary be instructed to communicate with Dr. William Pepper, provost of the university, and Dr. John S. Billings, surgeon U. S. A., director of the laboratory, requesting a conference for the purpose of formulating a plan by which the State Board of Health may avail itself practically of the facilities afforded by the laboratory for the investigation of the causes of disease, and of the means for its prevention, for the analysis of foods, water and other beverages, and for bacteriological studies.

Resolved, That in a definite co-operation between the University and the State Board of Health in the prosecution of such researches, the Board recognizes an op-

portunity not only for mutual profit, but for advantage of the greatest moment to the entire state.

A communication was presented from the secretary of the Woman's Health Protective Association of Pittsburgh, requesting the Board to take some action to abate the nuisance of promiscuous expectoration in public conveyances and other places. The letter was referred to the secretary for reply, with an expression of the sympathy of the Board with the work of the association.

Adjournment.

The Board then adjourned.

BENJAMIN LEE,
Secretary.

PART II.

APPENDICES.



APPENDIX A.

REPORTS OF STANDING COMMITTEES.

Report of the Executive Committee. Pemberton Dudley, M. D., Chairman.

Report of the Committee on Registration and Vital Statistics. Benjamin Lee, M. D., Chairman.

Report of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines. Howard Murphy, C. E., Chairman.

Report of the Committee on Public Institutions and School Hygiene, George G. Groff, M. D., Chairman.

Report of the Committee on Sanitary Legislation, Rules and Regulations. S. T. Davis, M. D., Chairman.

REPORTS OF EXECUTIVE COMMITTEE.

May, 15, 1891.

Your committee begs to report that, since the regular meeting of the Board in November last, two regular and two special meetings of the executive committee have been held.

The special meeting of the 22d of December, 1890, was for the purpose of endorsing the vouchers and pay-rolls covering the special expenditures made by the secretary in abating the nuisances caused by the floods of May 31, 1889, at Johnstown, the total amount of which was \$39,928.75. The committee, on motion, approved the vouchers and ordered them to be so endorsed before presentation to the Governor.

At the regular meeting held March 5, 1891, vouchers Nos. 409 to 425, amounting to \$750.82, were examined and approved.

At the special meeting held May 1, 1891, vouchers Nos. 426 to 436, and voucher No. 439, amounting to \$460.14 and \$5.16, were examined and approved.

At the regular meeting held May 14, 1891, voucher No. 437, amounting to \$288.97, was examined and approved.

Respectfully submitted.

PEMBERTON DUDLEY,
Chairman.

July 9, 1891

The executive committee beg respectfully to report that one meeting has been held since the last regular meeting of the Board held at Altoona, May 14, at which voucher No. 438 and vouchers Nos. 440 to 453, amounting to \$56.84 and \$564.08, were audited and approved.

Respectfully submitted.

PEMBERTON DUDLEY,
Chairman.

November 13, 1891.

Your committee begs to report that since the last regular meeting of the Board, two regular meetings and one special meeting of the executive committee have been held.

At the regular meeting, held August 31, voucher No. 439 and vouchers Nos. 453 to 466, amounting to \$460.28, were examined and approved. The bill of Dr. J. F. Edwards, amounting to \$200.00, for expenses incurred in publishing the minutes and papers of the Board in the *Annals of Hygiene*, was approved and ordered to be paid as soon as there should be funds in the treasury to meet it.

At the special meeting held September 21, vouchers Nos. 467 to 484, amounting to \$696.35, were examined and approved.

At the regular meeting held November 12, vouchers Nos. 485 to 486, amounting to \$303.54, were examined and approved.

Respectfully submitted.

PEMBERTON DUDLEY,
Chairman.

REPORT OF THE COMMITTEE ON REGISTRATION AND VITAL STATISTICS.

Your committee beg leave to submit the accompanying documents referred to them by the secretary, as a convincing proof of the necessity for the establishment of a system of registration of deaths in this state. The statement made by the coroner that he is greatly annoyed by such cases, indicates that, shocking as they are, they are not of infrequent occurrence.

PITTSBURGH, *July 7, 1891.*

DR. BENJAMIN LEE, *Secretary State Board of Health :*

DEAR SECRETARY: A week ago, Squire Gwynn, of Duquesne, of Allegheny county, called on me in reference to the enclosed verdict and contents of letter, thinking there was a law to cover the case, and not being informed by him, at the time, to the contrary, I told him he had better prosecute on some such charge as a misdemeanor. He returned a day

or so later to inform me that he had found no law to cover the case, that he had buried the child and administered a severe reprimand to the father and let him go. The next day after the squire called the second time I received the enclosed verdict and letter. I have seen the coroner since and suggested that we had better let the matter rest as it is, but that I would forward the letter and verdict to you, and that the knowledge of this case would be of value for future reference, in similar cases. The coroner says he is greatly annoyed by such cases.

Very respectfully,

J. R. THOMPSON,
Medical Inspector.

PITTSBURGH, *July 1, 1891.*

Dr. JAMES R. THOMPSON, *Representative State Board of Health, City:*

DEAR SIR: I hand you herewith a transcript of record in case of male child. The said child had been thrown into the river by the father because he had no money to bury it. As I think the matter should be investigated by your Board, will you please have it presented to the proper officials.

Very respectfully,

HERBERT McDOWELL,
Coroner.

Allegheny county, ss:

An inquisition indented, taken at Mifflin township, in the county of Allegheny, on the 26th day of June, A. D. 1891, before me, Josiah Gwynn, acting coroner of the county aforesaid, upon the view of the body of a male child then and there lying dead, upon the oaths and solemn affirmations of C. W. Allebrand, Thomas D. Davis, James Hunter, Wm. Thompson, Nick Williams, August Wisser, good and lawful men of the county, who being sworn and affirmed, and charged to inquire, on the part of the commonwealth, when, where and how, and after what manner the said male child came to its death, do say, upon their oaths and affirmations aforesaid, that a fully developed male child was found in the Monongahela river near Duquesne, Mifflin township, afloat on Friday, June 26, 1891, about 7.45 o'clock a. m., and the identity unknown, and the facts appearing suspicious as to its death. We the jury find upon testimony offered that the said child was placed in said river at, or near said point by one A. G., the father, the said being still-born, and we further censure the father for his cruel and barbarous treatment of said male child. And so the jurors aforesaid, upon their oaths or affirmations as aforesaid, say that the aforesaid male child for the cause aforesaid in manner and form aforesaid, came to its death, and not otherwise.

In witness whereof, as well of the aforesaid coroner, we, the jurors, have hereunto put our hands and seals on the day and year, and at the place above mentioned.

JOSIAH GWYNN, *J. P.* [SEAL.]

Deputy Coroner.

C. W. ALLEBRAND, [SEAL.]

JAMES HUNTER, [SEAL.]

NICK WILLIAMS, [SEAL.]

THOMAS D. DAVIS, [SEAL.]

WM. THOMPSON, [SEAL.]

AUGUST WISSER. [SEAL.]

STATE OF PENNSYLVANIA, }
County of Allegheny. } ss:

I, Herbert McDowell, coroner of Allegheny county, in the state aforesaid, do hereby certify that the above and foregoing is a true and correct copy of the verdict in the matter of the inquest held on the body of a male child of A. G., deceased, which was rendered on the 26th day of June, A. D., 1891, as appears from the records of my office.

Witness, my hand and seal at Pittsburgh, in said county, this 1st day of June, A. D. 1891.

HERBERT McDOWELL,

Coroner.

The prothonotary of Philadelphia has returned to the Board the names of three hundred and sixty-two physicians, as have registered in that city during the year ending July 1, 1891, and of sixteen as having died during the same period. The committee has prepared a blank for the returns of local boards of health in abstract, a copy of which is herewith submitted. The object of this blank is to enable the Board to get returns in advance of the preparation or publication of the full reports which are often delayed so long that they cannot appear until the report of the State Board for the following year. Many of the local boards have responded very promptly, and seem pleased with the plan.


Respectfully submitted.


BENJAMIN LEE,

Chairman.

ANNUAL REPORT OF THE HEALTH OFFICER OR SECRETARY OF THE BOARD
OR BUREAU OF HEALTH,

Of the of made to the State Board of Health
of Pennsylvania, for the year beginning January 1, 189 , and ending December 31,
189 .

 (Include nothing outside of these dates.)

 The annual report of the local board of health should be made as early in January as possible.—Write in the blank space after each question, or if more room is needed, write on the accompanying blank sheet placing the appropriate figure before each answer.

1. Give the name and address of each member of your board.

NAME.	Postoffice address.
., Secretary.
., Chairman.
., Member.
., “
., “
., Health Officer.

2. How many meetings have been held by the board during the year ?

3. Have any improvements or changes been made in your as regards
water supply, drainage and sewerage, or in the methods employed in disposing
of excreta ?

4. Nuisances. How many have been reported to your board ?
How many have been removed ?
Please report the facts in regard to any nuisances of unusual character,
or which have given unusual trouble in respect to decisions regarding them,
or in which there has been unusual difficulty in securing abatement.

5. Communicable diseases. Please give the facts called for in the following table :

NAME OF DISEASE.	No. of cases.	No. of deaths.	No. of outbreaks.	No. of houses infected.	No. of outbreaks confined to the first house.
Small-pox,
Diphtheria,
Scarlet Fever,
Typhoid Fever,

6. Are these diseases reported to your board by the physicians in attendance in
accordance with the law, ordinance or regulation requiring such reports ?

7. What action has been taken by your board when cases of the communicable diseases have been reported to it?
8. Were houses in which cases of small-pox, diphtheria and scarlet fever occurred placarded?
9. What diseases were more than usually prevalent during the year? (Measles, whooping-cough, German measles, pneumonia, cerebro-spinal meningitis, diarrhoeal diseases of children, etc.)
10. Please communicate the facts regarding any cases of disease which were interesting from a sanitary point of view. (Unusual course of epidemic prevalence, unusual symptoms or want of certain symptoms, observations as regards period of incubation, communication of diseases by contagion, spread of contagious diseases by public funerals, long periods of vitality of infection, concurrent or consecutive prevalence of diseases, etc.)
11. Schools. Have any special cases come under your observation in which unhealthy conditions existed? Have contagious diseases entered any of the schools? If so, what action was taken?
12. Are there in your any particularly unhealthy localities? If so, what appears to be the cause of such unhealthfulness?
13. What methods can you suggest for improving the sanitary condition of your?
14. Accidents. Has sickness or death resulted from accidental causes; drowning, fires, and kerosene accidents? If accidents have occurred from the last cause, please report in full to this Board.
15. Please communicate the facts regarding any cases of disease which have appeared to have been caused by polluted water, cess pool or sewer gas, defective ventilation, lead, arsenical, or other forms of poisoning.
16. Have any instances of food adulteration, or injurious effects from it, come to your knowledge?
17. Diseases of animals. Please report any cases of diseases of animals which have occurred, and any cases of relation or apparent relation between such diseases and human diseases.
18. Were any by-laws adopted by your board in 189 ? If so, please forward copies of all such to the office of the State Board.
19. Please give an account of any other work of interest which has been done by your board during the year.
20. Has the experience of your board suggested any changes which ought to be made in the health laws of the state? If so, please report them.
21. What compensation or pay has been received by the secretary or health officer of your board, or by other members? If payment has not been received, for what reason?

Signed

Date, 189 .

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REPORT OF THE COMMITTEE ON WATER SUPPLY DRAINAGE,
SEWERAGE, TOPOGRAPHY AND MINES.

PHILADELPHIA, November 12, 1891.

To the President and Members of the State Board of Health of Pennsylvania :

GENTLEMEN: The chairman of your committee on water supply, drainage, sewerage, topography and mines, has the honor to report that he has taken a very special interest in the matter of the contamination of a small stream in Chester county, by the drainage of the well-known Devon Inn. A regular complaint was made by residents and riparian owners on the banks of the stream below the Inn and the matter was referred to this committee. The secretary has been requested to have with him the documents which are on file referring to this case, reference to these will furnish the Board with such detail information as they may desire and it need not therefore be included in this report.

The facts are briefly these :

Chemical analyses by Drs. Leffmann and Cresson, an examination by Medical Inspector Atkinson, and inspection made by various members of the Board and others, clearly indicate that the owners and managers of the Devon Inn are dangerously polluting this water course.

The parties interested in this case are above the average in business and personal standing, and the present indications are that it may become a celebrated case.

It is maintained that one or more deaths, which have occurred, have been occasioned by the pollution of the stream and it is stated that this claim is considered to be well founded by the best legal medical authorities.

In view of the great importance which is attached to the rights of riparian owners in matters relating to water powers, etc., a great question is involved in this case. It is this, Has any person or corporation a right in any way to pollute or contaminate a water course of the Commonwealth of Pennsylvania, also, if they have the right to do this to a limited extent, how and by what authority is the limit to be determined? If the throwing of a dead mouse into a stream is excusable under the law, why should it not be permissible to throw into it the carcass of an ox or a horse.

The question has been raised by the secretary that it is not the business of the Board to take part in private quarrels between adjoining or contiguous owners, and the chairman of your committee heartily agrees with him in this view, but rights and values must necessarily enter into consideration of this class of sanitary questions. Ten residents on this stream claim to be aggrieved and there is certainly much of justice in

their claim. They can escape the dangers which have been created in this case by depriving themselves of their natural and vested rights. They can abandon their properties and live somewhere else, or they can continue their present places of residence and deprive themselves of keeping cows and other animals, or if they keep them, can fence off their stream and go to the inconvenience and expense of obtaining water elsewhere for their cattle and also for domestic uses, where the purity of the springs from which they have been obtaining their domestic water supply is endangered. Would it be right for the Board to take this position? If we should in a case of this kind why not in other cases? Why not say to every complainant, "If the conditions around you are unhealthful, your remedy is to move away or go to the expense and trouble to protect yourself." Is it not rather our duty in this case, and in all cases, to have the nuisance removed, so far as we are authorized by law to do so?

There is hardly a deed for a city lot recorded in this commonwealth which does not convey with the real estate the rights, ways, water courses, etc., thereunto belonging or in any way appertaining, and, as public officers, it seems to me that we should endeavor, in all cases which properly come before us, to assist in enforcing the law.

We no doubt all agree that the milk of cows is not to be regarded as safe if these cows drink the water into which the drainage of a large hotel enters close at hand, and it is to be presumed that the milk of such cows is not only used in the families of the owners, but is sold and generally distributed. One case of typhoid fever in the Devon Inn might thus cause hundreds of cases in the eastern-central part of the state, and the cause of many of these cases might never be suspected.

There are, of course, two sides to this question. The Devon Inn represents large capital and is a great accommodation to the public as a summer resort. They must necessarily create drainage and must, of course, dispose of it. They have made what they consider proper efforts to purify their drainage before it enters the stream, but these efforts have so far been unsuccessful. They have shown a disposition to make further efforts, and the chairman of your committee does not desire to persecute them in any way, but to assist them as far as possible out of this difficulty, but it cannot be considered otherwise than fortunate if a legal determination is reached in this case. If it is found that there are no laws to protect streams from contamination, or if these laws are not adequate, then it would seem to be the duty of the Board to urge proper legislation.

This is not merely a question between the owners of the Devon Inn and the complainants. It is one which affects almost every water supply in the commonwealth, and if a decision is reached in Pennsylvania it would largely influence decisions in similar matters in other states and would thus become of national importance.

The chairman of your committee would therefore respectfully urge that the Board exercise extraordinary vigor in this matter so far as the opportunity may offer.

All other matters which have required attention from an engineering standpoint are included in the secretary's report.

Respectfully submitted.

(Signed) HOWARD MURPHY,
*Chairman Committee on Water Supply, Drainage,
Sewerage, Topography and Mines.*

REPORT OF COMMITTEE ON PUBLIC INSTITUTIONS AND SCHOOL HYGIENE.

Dr. J. H. McCLELLAND, *President State Board of Health and Vital Statistics of Pennsylvania:*

SIR: Your committee has pleasure in reporting the following work accomplished during the past year:

Circular No. 2, on school hygiene has been prepared for the instruction of school trustees and controllers. Copies of this circular and also of circular No. 1, on school hygiene, have been distributed to all county and city superintendents of schools in the state, and it is hoped that the attention of the school authorities will in this way be directed to the importance of giving more attention to sanitary conditions about school premises, and of co-operating with the State Board of Health.

The other circulars of the Board have been circulated as far as possible at teachers' institutes and in different schools in the state, also at farmers' institutes to a considerable extent, and it is believed that much good has been accomplished in this way.

During the year there have also been delivered about twenty-five lectures to teachers and school directors, and at farmers' institutes, in which attention has been called to the importance of better sanitary conditions in the homes, schools, churches and public institutions.

The subjects which apparently need most attention, at the present time, in our schools, are: Insufficient lighting of the rooms; through which the eyes of the children are impaired. This is a matter which can and ought to be corrected in the erection of new buildings, and to which the Board should constantly direct attention of school trustees and architects. Another evil is that arising from the overworked condition of the children, especially in the lower classes and among the girls. This overwork, your committee believes, largely arises from the element of competition introduced into the schools. It is certain that nervous disorders prevailing among school children are, to some considerable

able extent, due to overwork. Another evil which has received the attention of your committee is the spread of contagious diseases throughout communities by the school children. These diseases prevail every year; mostly during the period when the the schools are in session, and among children of school age. There is great carelessness throughout the state in sending children convalescent from these diseases to the schools, as also children from homes in which contagious diseases prevail. It is believed, however, that by calling the attention of school directors and controllers to the importance of excluding all children who may be the means of spreading these diseases in the schools, that the matter will finally be arrested.

Your committee would also call your attention to the fact that there is a tendency in the towns of the commonwealth to abolish the intermission between sessions called "recess." This your committee feels is a serious error to which attention should be directed; as also prevailing tendency to reduce school hours to a single session. The first of these errors affects the young children most markedly; the second, the older children, and is especially injurious because it interferes with the regular meal hours.

Your committee has urged upon school directors, trustees and controllers the importance of having a health officer in every district, who should look after the construction, heating, ventilating and plumbing of the school buildings, and should also inspect the general health of the school children. A great advance will have been made when in every community there is such a school health officer.

Your committee is impressed with the feeling that some attention should be directed to the sanitary condition of the new and cheap health resorts which are springing up throughout the state, and in which often little attention is paid to good sanitary conditions. These resorts gather a large number of people during a few weeks in the summer season, and in them, from bad sanitary conditions, serious diseases are liable to occur, and to spread throughout the commonwealth. These institutions are also liable at the present time to contaminate the inland waters of the state whenever located upon the same.

More attention should be given to the ventilation of churches, to the attendance of persons at the services from families in which there are contagious diseases, and of persons convalescent from such diseases, as also to the holding of public funerals in churches in cases of deaths from contagious diseases. Possibly a circular addressed to the clergy on these topics might result in some reform.

Your committee feels that, on the whole, improvement is being made in the matter of the construction of school and other public buildings, as also in the heating, ventilating and plumbing of the same.

GEO. G. GROFF,
Chairman.

REPORT OF THE COMMITTEE ON SANITARY LEGISLATION,
RULES AND REGULATIONS. S. T. DAVIS, M. D., Chairman.

The committee on sanitary legislation, rules and regulations begs leave, respectfully to report that one month before meeting of the legislature it caused a copy of the last annual report of the Board to be sent to each new member of the legislature, and a complete set of the circulars of the Board to all members, together with the accompanying letter :

To the Honorable :

DEAR SIR: We have taken the liberty of ordering the fourth annual report of our Board to be sent to your address. Shall we be intruding too much upon your valuable time, if we request you to glance at its contents before the opening of the legislature in order to acquaint yourself with the extent and scope of our work ?

We also mail to you a set of our circulars, designed for the information of the public when their households are invaded by contagious diseases.

In order that we may be able to carry out fully the intentions of the law establishing the Board, it is essential that we should have the proper machinery in the shape of local boards of health or health officers throughout the entire state. We are now like a general and staff without an army, and the enemy, disease, is already in the field in full force.

The water supplies of our cities and towns are in daily increasing danger of pollution, thus unnecessarily sacrificing the lives, health, and consequently the wealth, of many of our citizens. An earlier knowledge of epidemic invasions, especially of those occurring in our rural districts and the interior of counties is urgently needed. The difficulty of securing this knowledge, under our present imperfect system, seriously retards prompt action by the Board. The utter impossibility of collecting and preserving our vital statistics, with our present limited appropriation, must be apparent to you, yet this is one of the chief objects for which the Board was created.

We could use the full limit of our possible appropriation (\$10,000.00 per annum) with great advantage to the public health. Many smaller states devote two or three times as much to this purpose. We beg you therefore to consider carefully the expediency of giving your valuable aid to legislation having the following objects :

First. The complete sanitary organization of the state ;

Second. The prevention of the pollution of streams ; and

Third. The appropriation to the uses of the Board of the entire amount allowed by the law.

We have the honor to be, dear sir,

Your obedient servants,

SAMUEL T. DAVIS, M. D.,

Late Member of the House of Representatives.

PEMBERTON DUDLEY, M. D.,

Professor of Sanitary Science in the Hahnemann

Medical College of Philadelphia.

BENJAMIN LEE, M. D., *Secretary,*

Committee on Sanitary Legislation.

Immediately after the introduction of the bill to protect the purity of streams, the following letter was addressed to the editors of leading newspapers throughout the state:

To the Editor of :

DEAR SIR: Allow me to call your attention to a bill now in the House of Representatives for the protection of water supplies throughout this commonwealth. The extent to which all the streams of our state are now polluted, and the rapid increase of such contamination within the last few years, can only be appreciated by those who have personally investigated the subject. The amount of disease and the number of deaths caused by the use of impure drinking water, and the increase in sickness of a nature attributable to this cause, is known only to boards of health and those who make a careful study of mortuary reports. It is earnestly hoped, therefore, by our Board that you will use your valuable editorial influence in support of the passage of this measure and in opposition to such amendments as would exempt all manufacturing industries from the provisions of the act, a copy of which is herewith enclosed.

Yours very truly,

BENJAMIN LEE,

Secretary.

Later in the session the following communication was addressed to the officers of all water companies west of the Allegheny mountains, for the purpose of interesting them in the effort to obtain legislation to prevent the pollution of water supplies:

PHILADELPHIA, *February 18, 1891.*

DEAR SIR: The representatives of the principal water companies west of the Allegheny mountains have recently met in a convention in Pittsburgh to discuss the subject of the pollution of water supplies. As a result of their deliberations, they have framed a bill for protecting the purity of inland waters, giving the State Board of Health a certain amount of supervision and control over them. They also appointed a

delegation to visit Harrisburg on the 25th of the present month and appear before the committees of both Houses to which the bill has been referred, urging reasons for its adoption. A delegation from the State Board of Health will also be present for the same purpose. Allow me respectfully to suggest the expediency of your own company sending a representative to be present on that occasion. The object is one the importance of which must commend itself to you, and the presence of a body of thoroughly representative men at Harrisburg could not fail to make an impression in its favor upon the legislature.

I have the honor to be dear sir, your obedient servant,

BENJAMIN LEE,

Secretary.

The following bills in which the Board was interested passed at the last session of the legislature:

1. House bill No. 635, entitled "An act to provide for the current expenses of the State Board of Health."

The following is the history of this act: The bill passed the House authorizing the appropriation of \$5,000 annually, and soon after passed the Senate in the same shape.

At the request of the committee, Senator Showalter had the bill reconsidered and amended, making the sum \$10,000. The House refused to accept this amendment, and a committee of conference was appointed, of which the following is the official record:

REPORT OF COMMITTEE OF CONFERENCE ON HOUSE BILL No. 635,

Entitled "An act to provide for the current expenses of the State Board of Health and Vital Statistics."

To the Honorable the Senate and House of Representatives of the Commonwealth of Pennsylvania:

GENTLEMEN: The committee of conference to whom was submitted the differences existing between the two Houses on House bill No. 635, entitled "An act to provide for the current expenses of the State Board of Health and Vital Statistics," respectfully recommend that the Senate recede in part from its amendments, and that the House recede in part from its non-concurrence in the Senate amendments, and that the said bill, as agreed upon, be made to read as follows:

J. M. WOODS,

J. B. SHOWALTER,

JAMES ROONEY,

Committee on the part of the Senate.

J. E. WOODMANSEE,

H. N. HESS,

JOHN MECLEARY,

Committee on the part of the House of Representatives.

AN ACT

To provide for the current expenses of the State Board of Health and Vital Statistics.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That the following sums be and are hereby specifically appropriated to defraying the expenses of the State Board of Health and Vital Statistics, for two years, namely: For the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety-one, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety-two:

For salary of secretary and executive officer for two years, four thousand dollars; for the employment of necessary clerical aid in the office of the Board, for postage, telegrams, express charges and incidental office expenses, for traveling and other necessary expenses of the members and secretary of the Board while engaged in the actual duties of the Board, and for sanitary inspections, control of epidemics, protection of water supplies, and laboratory investigations and analyses for two years, eight thousand dollars, or so much thereof, as may be necessary.

The amounts expended from the above appropriation shall be distributed by the said board in accordance with the requirements of the sanitary service of the commonwealth and with reference to such emergencies as may arise and shall be settled with the Auditor General and State Treasurer in the usual manner.

2 An act to prevent the pollution of the waters of streams supplying cities of the commonwealth, which reads as follows:

AN ACT

To prevent the pollution of the waters of streams supplying cities of this commonwealth.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That it shall be unlawful to hereafter establish any cemetery upon lands located within one mile from any city of the first class of this commonwealth, the drainage from which empties or passes into any stream from which any portion of the water supply for such city is obtained.

APPROVED—June 8, 1891.

3. An Act to prevent the pollution of springs, water wells and streams, by water escaping from abandoned oil wells and gas wells, which reads as follows :

AN ACT

To prevent the pollution of spring water wells and streams by water escaping from abandoned oil wells and gas wells.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That upon the abandonment or ceasing to operate or use any well, which shall have been drilled for oil or gas, it shall be the duty of the person or persons interested in such well to plug the same, so as to completely shut off and prevent the escape of all water therefrom which may be impregnated with salt or other substances, which will render such water unfit for use, for domestic, steam making or manufacturing purposes, and in such manner as to prevent water from any such well injuring or polluting any spring water, well or stream, which is or may be used for the purpose aforesaid.

SECTION 2. Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall be sentenced, upon conviction thereof to pay a fine of not more than one thousand dollars or to undergo an imprisonment for a period not exceeding six months, or both, or either, at the discretion of the court.

SECTION 3. Whenever any person may be injured by neglect or refusal to comply with the first section of this act it shall be lawful for such person, after notice to the owner or lessee of the premises upon which such well is located, to enter upon and fill up and plug such well in the manner directed by the first section hereof, and thereupon to recover the expense thereof from the person or persons whose duty it was to plug and fill up said well, in like manner as debts of such amount are recoverable.

SECTION 4. All acts and parts of acts inconsistent herewith are hereby repealed.

APPROVED—The 26th day of May, A. D., 1891.

The following is a complete list of bills relating to public health and safety which were passed by the last legislature, and have since received the signature of the Governor and become laws of the commonwealth, viz:

1. "An act to provide for the current expenses of the State Board of Health and Vital Statistics."

2. "An act providing for the ascertainment of the amount of money expended by James A. Beaver, Governor of the Commonwealth, and for the settlement of an account against the commonwealth for said expenditure, in removing and abating the nuisances caused by the floods of 31st of May and 1st of June, A. D., 1889, at Johnstown and its vicinity, and in the valleys of the Conemaugh and Kiskiminetas rivers of the West

Branch of the Susquehanna, upon the report and by the direction of the State Board of Health as being dangerous to the public health, and making an appropriation for the payment of the amount so ascertained and settled, to the persons advancing the said money."

3. "An act to prevent the pollution of the waters of streams supplying cities of this commonwealth."

4. "An act to prevent the pollution of springs, water wells and streams by water escaping from abandoned oil wells and gas wells."

5. "An act making an appropriation to the State Hospital for the Insane at Danville, for the purpose of extending the sewerage pipes of said hospital to a point about a mile below the town of Danville."

6. "An act to authorize the burgess and council of all incorporated boroughs to widen and deepen streams and water courses running through said boroughs, and to erect dykes and embankments along the same, and to empower the burgess and councils to enter upon private property on and along such streams and water courses for the purpose of procuring material for such work, and to provide for the payment of the expense thereof, and the assessment of damages sustained to private parties thereby."

7. "An act to repeal section one of an act approved the 10th day of April, A. D., 1873, entitled 'A supplement to an act entitled an "Act to regulate the sale of clams and oysters," approved the 4th day of May, A. D., 1871.'"

8. "An act to prevent fraud in the sale of lard and providing penalties for the violation thereof."

9. "An act to provide for the ordinary expenses of the executive, judicial and legislative departments of the commonwealth, interest on public debt, and for the support of the public schools, for the years A. D., 1891 and 1892.

Section 28, appropriation for expenses of the commission to select a new location for the Philadelphia quarantine station.

10. "Joint resolution establishing a commission to consider the question of selecting a suitable site for a quarantine station on the Delaware river."

11. "An act to amend the fourth section of an act, entitled 'An act to regulate the practice of veterinary medicine and surgery in Pennsylvania,' approved the 11th day of April, A. D., 1889, so that practitioners shall be admitted to register as such, and to pay registration fee at any time prior to the 1st day of January, 1892, but not on or after that day."

12. "An act in relation to cremation of human bodies in this commonwealth."

13. "An act to amend an act, entitled 'An act to regulate the practice of pharmacy and sale of poisons, and to prevent adulterations in drugs and medicinal preparations in the State of Pennsylvania,' approved the 24th day of May, A. D., 1887."

14. An act providing for the appointment of a commission by the Governor to revise, amend and make such changes in the mining and ventilation laws of the anthracite coal regions as will secure greater safety to human life and property, and to provide for the payment of their compensation and their necessary expenses."

15. "An act to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith."

16. "Joint resolution authorizing the appointment of a commission on ventilation and regulation of bituminous coal mines."

It will be seen therefore that the legislature has at least taken no step backward in the recognition of the necessity for more enlightened sanitary legislation. It has slightly increased the appropriation for the Board's uses, and has adopted measures, however incomplete, which recognize the duty of protecting the water courses of the state from pollution. We have therefore reason for encouragement and for renewed efforts in the creation of a public sentiment which shall compel increasing concessions to the demands of sanitary reform.

Respectfully submitted.

SAMUEL T. DAVIS,
Chairman.

BENJAMIN LEE,
Secretary.

APPENDIX B.

REPORTS OF INSPECTIONS.

1. Inspection at St. David's, Delaware county. By William B. Atkinson, M. D., Medical Inspector.
2. Inspection at Parsons, Luzerne county. By L. H. Taylor, M. D., Medical Inspector.
3. Inspection at Scotland, Franklin county. By R. L. Sibbet, M. D., Medical Inspector.
4. Inspection at Greensburg, Westmoreland county. By W. E. Matthews, M. D., Medical Inspector.
5. Inspection at Two Licks, Indiana county. By W. E. Matthews, M. D., Medical Inspector.
6. Inspection at Gettysburg, Adams county. By R. L. Sibbet, M. D., Medical Inspector.
7. Inspection at Sandy Lake, Mercer county. By A. A. Woods, M. D., Medical Inspector.
8. Inspection at Cheswick, Allegheny county. By J. R. Thompson, M. D., Medical Inspector.
9. Inspection at Media, Delaware county. By William B. Atkinson, M. D., Medical Inspector.
10. Inspection at Chestnut Hill, Montgomery county. By William B. Atkinson, M. D., Medical Inspector.
11. Inspection at Prestonville, Montgomery county. By William B. Atkinson, M. D., Medical Inspector.
12. Inspection at Carbondale, Lackawanna county. By L. H. Taylor, M. D., Medical Inspector.
13. Inspection at Glen Riddle, Delaware county. By William B. Atkinson, M. D., Medical Inspector.
14. Inspections at Bitner's, Lancaster county.
 - (a) By P. A. Hartman, M. D., Medical Inspector.
 - (b) By S. T. Davis, M. D., Member of the Board.
 - (c) Supplementary, by S. T. Davis, M. D.
 - (d) Analysis of water.
15. Inspection at Millville, Columbia county. By Wm. Leiser, M. D., Medical Inspector.
16. Inspection at Tullytown, Bucks county. By Wm. B. Atkinson, M. D., Medical Inspector.

Supplementary Inspection.
17. Inspection at Nicholson, Wyoming county. By L. H. Taylor, M. D., Medical Inspector.
18. Inspection at Shippensburg, Cumberland county. By R. L. Sibbet, M. D., Medical Inspector.
19. Inspections at Cressona, Schuylkill county. By W. Murray Weidman, M. D., Medical Inspector.

Second inspection.

Third inspection.
20. Inspection at Chadd's Ford and Cossart, Delaware county. By William B. Atkinson, M. D., Medical Inspector, and Benjamin Lee, M. D., Secretary.

21. Inspections at Wallingford, Delaware county. By William B. Atkinson, M. D., Medical Inspector.
 22. Inspection at Howellville, Chester county. By William B. Atkinson, M. D., Medical Inspector.
 23. Inspection at Rochester Mills, Indiana county. By W. E. Matthews, M. D., Medical Inspector.
 24. Inspection at Camp Sherman, near Devon, Chester county. By William B. Atkinson, M. D., Medical Inspector.
 25. Inspection of the Drainage System at Wayne, Delaware county. By William B. Atkinson, M. D., Medical Inspector.
 26. Inspection at Schuylkill Haven, Schuylkill county. By W. Murray Weidman, M. D., Medical Inspector.
 27. Inspection at Tyrone, Blair county. By George G. Groff, M. D., Member of the Board.
 28. Inspection at Washington, Washington county. By J. R. Thompson, M. D., Medical Inspector.
 29. Inspection at Butler, Butler county. By J. R. Thompson, M. D., Medical Inspector.
 30. Inspection at Lenni, Delaware county. By William B. Atkinson, M. D., Medical Inspector.
 31. Inspection at Forest City, Forest county. By L. H. Taylor, M. D., Medical Inspector.
 32. Inspection at Shanksville, Somerset county. By J. S. Hackney, M. D., Medical Inspector.
 33. Inspection of a Dam, Lebanon county. By W. Murray Weidman, M. D., Medical Inspector.
 34. Inspection at Montrose, Susquehanna county. By L. H. Taylor, M. D., Medical Inspector.
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1—INSPECTION AT ST. DAVID'S, DELAWARE COUNTY.

By WILLIAM B. ATKINSON, M. D., *Medical Inspector.*

I inspected the premises at St. David's occupied by Mrs. M——, on November 10. At the rear the drainage was so imperfect that the water from the kitchen settled in the path and around the entrance, and I was informed that on some occasions it backed up into the rooms. In this room the woodwork at the edge of both doors was badly rotted and broken. The drainage led into a lot where a temporary well had recently been dug to prevent the sewage flowing over the adjacent land. I was informed that after rains this well overflowed and also backed up to the house. The drainage from the bath room, water closets, etc., led down to a cesspool in the rear near the stable, where a well received it. The cesspool in the rear was full and in a very unclean condition. The water pipes leak around the sinks and wash tubs, which keeps the floor constantly wet. The cellar is also wet from the drainage and leaks; there is a leak in the tank room, and the pump there does not work.

I would suggest that all the drainage be made complete, and that connection be made with the sewers on the west, which can readily be done.

Inside the main building there were evidences of dampness, the paper being loose and ready to fall in the bed room on the first floor, and in one corner of the parlor.

All of which is respectfully submitted.

2—INSPECTION AT PARSONS, LUZERNE COUNTY.

By LEWIS H. TAYLOR, M. D., *Medical Inspector.*

WILKES-BARRE, PA., *November 18, 1899.*

I proceeded to-day to Parsons, and after a careful investigation would respectfully report that I do not find anything in the general sanitary conditions of the place constituting a nuisance. The town is reported by the two physicians resident there, to be in as healthy a condition as usual. There is nothing approaching an epidemic of any kind. There have been a few cases of diphtheria; one physician reporting two, the other four: all of them mild cases. Six cases of scarlet fever are reported in the practice of the two physicians mentioned, with one death. There are other physicians in adjoining towns who have some practice in Parsons. I will write to them and find out definitely whether any cases are under their charge and will report to you later. The village of Miner's Mills, adjoining Parsons, about one mile distant, has had many cases of diphtheria, and much carelessness has prevailed, but in my judgment the scourge is on the decline. I will, however, investigate this also, and communicate with you at my earliest convenience. I enclose a clipping from one of our daily papers, showing how little confidence can be placed in such reports. On the strength of it, I had already supplied Drs. Debane and Rhoads with the Board's circulars before receiving your communication.

LETTER TO THE BURGESS OF PARSONS, LUZERNE COUNTY, BY BENJAMIN
LEE, M. D., SECRETARY.

1532 PINE STREET, *November 15, 1890.*

To the Burgess of Parsons, Luzerne County, Pa.:

DEAR SIR: Information has been received at this office that an epidemic of malignant diphtheria, and an epidemic of scarlet fever are prevailing in your borough. I send you circulars with reference to precautions to be taken for the prevention of the spread of both of these diseases, as well as circulars indicating the dangers of public funerals of those who have died of contagious diseases. I also send a copy of the

model ordinance recommended by the State Board of Health for adoption in all boroughs. It would be well for your council to adopt this ordinance, so far as it is applicable to a town the size of Parsons. If this is not done, you should at least adopt an ordinance to take effect during the present epidemic, making it an offense, punishable by fine, to have public funerals in these cases, and also for children who have recently recovered from these diseases, or in whose families they exist, to attend church, Sunday school, day school or any other public assembly.

I have instructed the medical inspector of your district (Dr. Taylor, of Wilkes-Barre), to make an inspection in Parsons, and if he finds the conditions alarming, I shall issue a proclamation, declaring diphtheria epidemic in the town.

Trusting that you will give this matter serious and unremitting attention, have the honor to be,

Yours respectfully,

BENJAMIN LEE, M. D.,
Secretary.

3 -INSPECTION AT SCOTLAND, FRANKLIN COUNTY

By R. L. SIBBETT, M. D., *Medical Inspector.*

CARLISLE, *December 19, 1890.*

I went to the village of Scotland, Franklin county, and was kindly received by the citizens. Dr. J. J. Coffman, the resident physician accompanied me and he has just forwarded a sketch of the place and the data of fourteen cases of typhoid fever, two of which died and two are still ill. As will appear from the sketch, the greater part of the village is on elevated ground, the highest point being about sixty feet above the Conococheaque and a small stream of water on the east. Two things were remarked by the citizens—that typhoid fever cases had been very rare in their midst until recently, and that these were mostly on the highest ground of the village.

What may be called the local facts and the history of the several cases admit of two theories: The first accounts for six of the fourteen cases referred to. Mr. and Mrs. H—, of Chambersburg, received into their home (being relations), Miss B— and her sister, from Scotland, about the first of September. They all drank the water of a cool spring, which Dr. Cresson, of Philadelphia, afterwards condemned. About two weeks from this date, Dr. Montgomery was called to attend the first two. Mr. H— died and his wife made a slow recovery, Miss B— and her sister returned home, and on the 12th and 14th of

September, called Dr. Coffman to attend them. Both recovered after three weeks of sickness in bed. On the 1st of October Dr. Coffman was called to prescribe for a young man in the family of the two sisters, and he advised him to return to his relatives in Cumberland county. Here he recovered, but his sister who nursed him, took the fever and died. We have thus a group of six patients, four of whom drank of the same spring water and took typhoid fever; the other two took the disease by infection as we may suppose.

We cannot however connect the other cases so easily and are obliged to seek another solution. The cause of the disease at Scotland may not indeed have any connection with that at Chambersburg. Near the kitchen of the home of Miss B—— and her sister, is a well which is suspected, and the two sisters as well as the young man drank of it every day. Moreover, the neighbors, during the summer and at this time were accustomed to pump water from this well for drinking and culinary purposes. Mr. H—— having only a cistern at his house carried water from this well and drank freely of it. On the 7th of September, Dr. Coffman was called, and he attended him several weeks. One month afterwards Mrs. H——, in the same house, took sick with the symptoms of fever and is still in bed. On the 28th of November Miss E——, likewise in the same house, was attacked, but her symptoms are fortunately not serious.

Three other cases in as many homes, are known to have drank of the water of this well in preference to cistern water, but it is said that two of them, going to school, drank also of the water of another, which is also suspected.

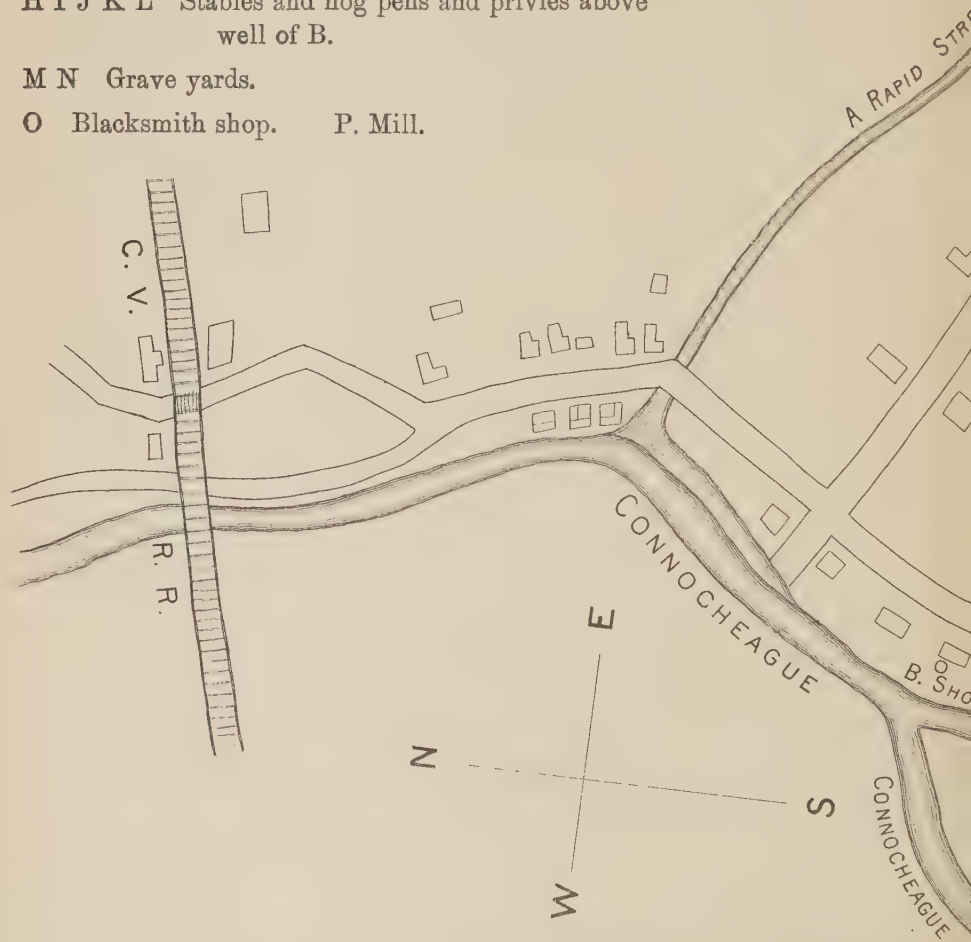
But there remain two other cases, the first of the series, the cause of whose sickness cannot be so easily ascertained. They lived in separate houses on the eastern side of the village. Dr. Coffman was called to attend them July 26th and 29th. Of the fourteen cases two died.

From the foregoing it is clear that the cause of the epidemic of fever in this village is to be found in impure drinking water. A permanganate of potash solution reveals the fact of the presence of a heavy sediment, and a good microscope shows that it is organic.

I have already directed the citizens of Scotland to abandon the use of the water of the two wells referred to, and the water of others similarly located, and I have likewise directed them to use cistern water or water taken from the bed of the creek. The ground upon which the village is built is like that at Chambersburg, sandy and leachy, and hence it is impossible to find pure well or spring water in it. Stables, pig-pens, water-closets and chicken coops seem to be necessary attachments to dwelling houses, and the process of infiltration from these, as is well-known, goes on day and night, summer and winter, and hence the pollution of wells and springs in this kind of soil.

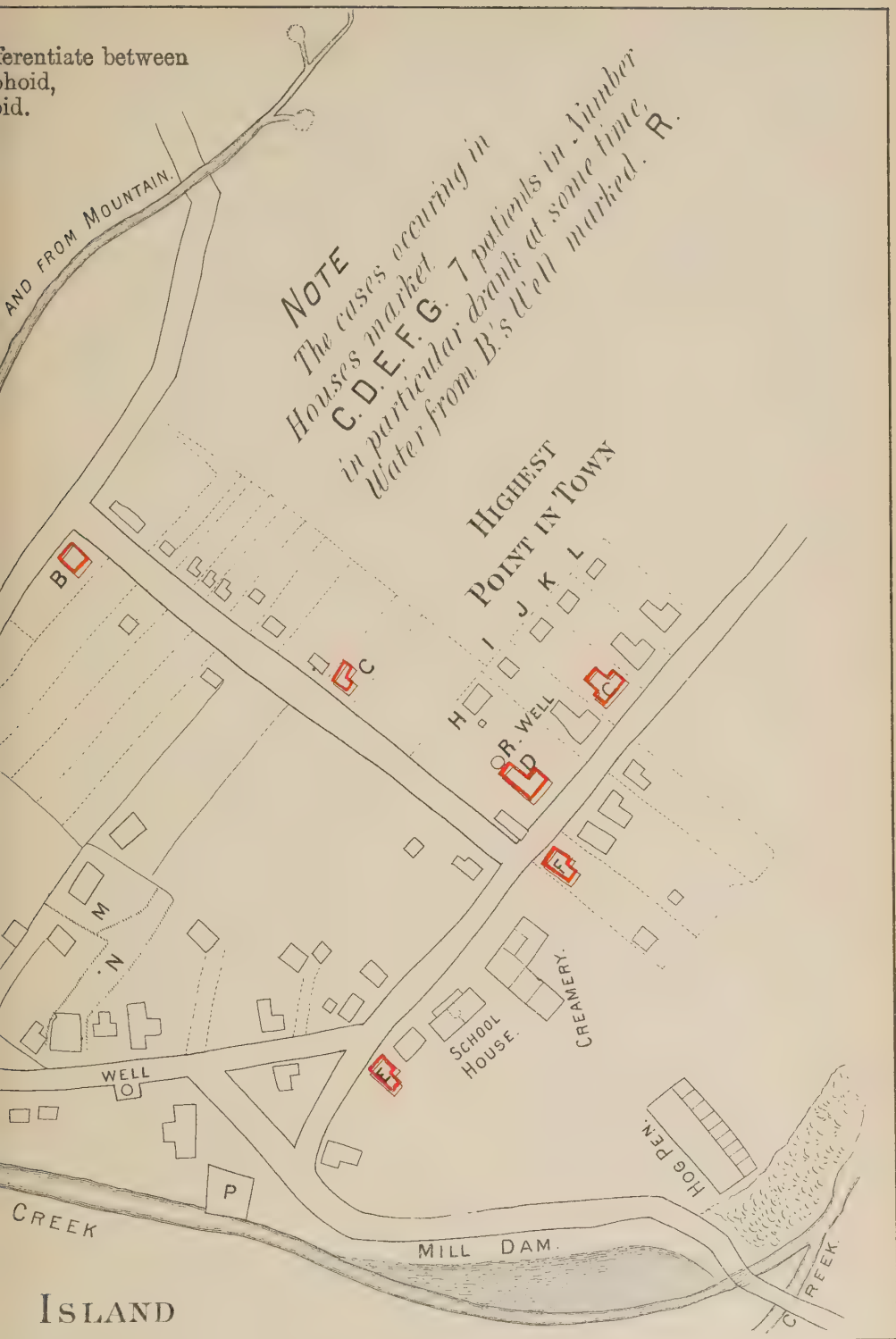
All of which is respectfully submitted.

- A Aged 17 years, case of continued fever from July 26, 1891. } Difficult at t
Remittent
but resem
- B Aged 8 years, " " " " July 29, 1891. }
- C Aged 58 years, Mr. H. became sick September 7th.
- D The two Misses B. became infected and were taken sick September 12th and 14th respectively. Here also, on September Mr. B., a boarder, became infected, went home to Cumb. Co., from whom his sister contracted disease and died.
- E A school boy, N. M., took sick Sept. 28.
- F M. C. took sick Oct. the family get water from well at B.
- G A. B., school girl, took sick Oct.
- H I J K L Stables and hog pens and privies above well of B.
- M N Grave yards.
- O Blacksmith shop. P. Mill.



differentiate between
cholera,
typhoid.

NOTE
*The cases occurring in
Houses marked
C. D. E. F. G. 7 patients in Summer
in particular drank at some time,
Water from B's Well marked. R.*



4—INSPECTION AT GREENSBURG, WESTMORELAND COUNTY.

By W. E. MATTHEWS, M. D., *Medical Inspector*.

On January 20, 1891, I went to Greensburg and inspected (with Mr. Frank Cowan), the court house cellar, and surroundings. There are a number of cells in the cellar which are used by the borough as a lock-up. These are in a very filthy condition. In consultation with the commissioners, I was assured that orders had been issued to remove these cells and clean the place. An old well is on the premises, into which a number of pipes drain. It is full to within a few feet of the surface. I suggested that this should be emptied, disinfected and filled with fresh earth, and then a drain be made into the sewer. The heaters are in the cellar and the air supply comes from the cellar, thus carrying foul air to all parts of the building. This should be remedied by taking the supply from outside. I urged the cleaning and disinfection of the entire cellar, the removal of its floor, and the covering the surface with an inch of lime and the white washing of the wall. All this, after a thorough disinfection of every part.

LETTER FROM THE SECRETARY TO THE PRESIDENT OF THE BOARD OF COMMISSIONERS OF WESTMORELAND COUNTY.

GREENSBURG, PA., *January 23, 1891.*MR. S. G. THOMPSON, *President Board of Commissioners of Westmoreland County:*

DEAR SIR: The attention of this Board having been called to the insanitary condition of the court house at Greensburg, in consequence of the use of its cellar as a city jail, Dr. W. E. Matthews, medical inspector of the Board for the Conemaugh district, was ordered to make an inspection. In his report he advises me that he has made the following suggestions for placing the court house in a good sanitary condition as soon as the cells have been removed. These suggestions comprise a thorough cleansing of the entire premises, the disinfection and refilling with clean earth of the rat holes in the floor, the conduction of all the drainage of the building into a public sewer, the construction of fresh air ducts to lead the outside air to the air chambers, the use of disinfectants to such portions of the floor as have been especially exposed to filth where there is reason to suppose that the ground underneath may have become saturated. The floor should be raised, the foul earth removed, and clean earth mixed with lime substituted. The wood work of the rooms above should be washed with a solution of corrosive sublimate of the strength of one part to a thousand, after having been well scrubbed with soap and hot water. If the walls are white-washed they should have a fresh coat. I need not urge upon your honorable board the impor-

tance of having all the wells removed in the briefest possible time. The Board will always hold itself in readiness to aid you in any work of a sanitary nature in any of the buildings or premises under your control.

Yours respectfully,

BENJAMIN LEE,
Secretary.

LETTER TO THE BURGESS AND COUNCIL OF GREENSBURG BY THE SECRETARY.

January 23, 1891.

To the Burgess and Council of Greensburg, Pa.:

GENTLEMEN: An inspection recently made by the medical inspector of this Board for the Conemaugh district, of the cells used for the incarceration of prisoners in your borough leads me to question whether they are properly provided, in regard to ventilation and other respects, for the imprisonment of human beings, I will therefore request you to send me at your earliest convenience an accurate description of these cells, giving material, inside dimensions and furniture and position and size of ventilating apertures. The position of the latter being indicated by their distance from the floor, from the sides and from the top of the cells. I would strongly urge that until an opportunity has been given to the Board for judging of this matter the cells be not permanently placed in any other building. I would also call your attention to the fact that the sanitary authorities entirely condemn the use of cellars as dormitories. The board of health of the city of New York expressly forbids the renting and occupying of cellars as human habitations.

I have the honor to be,

Yours respectfully,

BENJAMIN LEE.
Secretary.

5—INSPECTION AT TWO LICKS, INDIANA COUNTY.

By W. E. MATTHEWS, M. D., *Medical Inspector.*

JOHNSTOWN, PA., February 19, 1891.

I submit the following report of conditions found at Two Licks, having made inspection to-day in company with Drs. St. Clair and Reed. Two Licks is a small town of a population of eighty. Since last July about sixty have had what I believe, from description, to be typhoid fever. One of every eight afflicted have died, and strange to say all except one have been strong and healthy young men, ranging from twenty-three to

forty years of age. The town is situated on a small stream, ground low and marshy, subsoil very porous. Supply of drinking water is from wells, these being rather shallow. A chemical works is situated just above the town, but I cannot see how any material from this could enter the drinking water. I believe that Drs. St. Clair and Reed are of the opinion that the source of the trouble is in the water supply, as people working in this place and living some little distance out of the town, hence not using the water, do not or have not suffered. At the present time there are but two or three cases, and these are convalescing. As to this being typhus fever I am not prepared to say, but as far as history of cases is concerned I believe the typhus is to be left out of this question. Dr. Campbell, who has attended more of these cases than anyone else, assures me that all the cases he attended were cases of typhoid fever. Some not running a regular course. The cases at Two Licks are very similar to many cases we have in Johnstown, and the post mortems and hemorrhages from the bowels prove these cases to be typhoid fever. The remedy for the people of Two Licks is a new water supply. A spring just above Two Licks could be utilized for this purpose with little expense, or an artesian well could be sunk. Hughes & Guthrie, who have large lumber interests here, have already spoken of sinking a well.

The chemical works are owned largely by Sutton Bros., of Indiana, and Wilse Taylor, of the Farmers' Bank of Indiana.

If the question of a new water supply was placed before these lumbermen and these chemical men I believe they would combine and furnish this for their employes.

6—INSPECTION AT GETTYSBURG, ADAMS COUNTY.

By R. L. SIBBET, M. D., *Medical Inspector.*

CARLISLE, Pa., *February 20, 1891.*

I went to-day to Gettysburg and made an inspection of the nuisance complained of by Mr. H. A—— D——. From him and from his attorneys I learned that he had prosecuted the borough council for maintaining a nuisance near his residence, that the court had sustained the plaintiff on several occasions, that twelve reputable citizens had made affidavit to the existence of such nuisance, and I also learned from plaintiff, and other reliable sources, that the council proposed to continue the case in court at the expense of the borough. I called upon the burgess and several members of the council and was received with respectful indifference; nevertheless, at my suggestion, a meeting of the citizen taxpayers, one week later, was agreed upon.

January 6, I returned but found that the council desired a private meeting, to which I of course agreed. However, a dozen or more citizens

thought it their duty to attend, among whom were, Drs. Charles and Robert Horner, Dr. O'Neil and Dr. Stahley, of Pennsylvania College. The discussion took the form of a running debate, in which the president and attorney of the council took a leading part in the defense of their policy. On the other hand the medical gentlemen, and other citizens present, concurred with me as to the importance of abating the nuisance referred to as well as other nuisances which were known to exist. Failing to elicit any satisfactory information or promise from the council on which I might base an intelligent report, I concluded to ask for another meeting one week later, to which the citizen taxpayers might be freely admitted.

January 13, I returned, and after a more thorough inspection of the other nuisances complained of, I met the council and about a hundred citizens in the grand jury room of the court house. At this meeting there was greater freedom of discussion, but no one of the council volunteered to give any information concerning the nuisances of which the people complained. A communication from Dr. Breidenbaugh, professor of chemistry in Pennsylvania College, on the subject of drainage, was read, and a few remarks were made by Dr. Stahley, professor of physiology and hygiene in the same institution. I may add that the nuisance complained of by Mr. D—— has existed for many years, and the only statement that I could draw from any members of the council was this, that he knew of the output of this drain before he purchased the lot of ground and built his house. The following, which was immediately prepared and was received, may be sufficient to complete my report:

CARLISLE, PA., *January 15, 1891.*

To the Burgess and Council of the Borough of Gettysburg:

GENTLEMEN: After a careful inspection of the sanitary condition of your borough, on three separate occasions, and two meetings at which a variety of public health topics were discussed by members of the bar, medical practitioners and other citizens, I have the honor, as a representative of the State Board of Health, to present the following for your consideration:

Gettysburg is favorably situated on elevated ground, most of which lies between two small streams—Stephens' on the northeast, and Culps' run on the southwest, both of which are dry part of the year. The rainfall and small springs issuing from the sloping ground on either side, found their way by direct courses into these streams until interfered with by the hand of man. The construction of a railroad between Stephens' run and the higher parts of the town has interfered with the natural drainage very much. This artificial work laid the foundation for nuisances of which the people now very frequently complain. Moreover the town council in former years not appreciating the full value of free and direct drainage and of sanitation in a growing population, as-

sisted in laying the foundation of these nuisances. The natural surface drainage of Baltimore street would be down Carlisle street, under the railroad and on to Stephens' run; but it has been deflected to the right and left at Centre square; first, down York street, over Stratten street, and again at a right angle between the houses and lots of ground owned by Stoner and Swope, and through other lots of ground to Stephens' run; second, to the left down Chambersburg street, and again at a right angle into the same run. What is true of Baltimore street is also true of Stratten and Washington streets. Their drainage being added on the right and left. Thus the drainage of the greater part of the town is turned out of its direct and natural course and thrown upon two points where the people complain that the water sometimes covers their pavements and enters their cellars.

But there are several other features of this question of drainage to which it is important to ask your attention. On the left of Baltimore and Carlisle streets it became necessary for the property owners to underdrain their cellars at their own expense. Hence as many as fifteen or twenty drains have been made, all leading into a zig-zag pipe. In the construction of these, stone, terra cotta, tiling and wood have been used, and apparently without any supervision or intelligent direction by the council. On account of the imperfect construction of these drains the contents of privies have been passing into them, and as a consequence the output near the residence of Mr. D——, and the opening in the gutter near by, have become an intolerable nuisance, twelve citizens having made oath to this effect. On the same side of town and along a street parallel with Washington is an open drain which has also been a nuisance for many years. In these parts of the town a few cases of fever and diphtheria are known to have existed every year.

Passing to the other side of town, my attention was directed to two other drains partly closed, but for the most part open, into which all kinds of excrement are deposited. The first one is said to begin with the Globe Inn. It passes by C——'s slaughter house and cattle yard in the alley, and takes in the fluid contents of both. It then passes between the houses owned by I—— and F—— on Railroad street, in which four cases of diphtheria were treated not long ago. At this point it receives the drainage of the gutters, and gives off at times an intolerable stench. It then passes under the railroad and on down to Stevens' run. The other drain on this side of town has been referred to. It receives a large amount of animal matter from Baltimore, York at Stratten streets, and is open the whole length. Privies are built close to the edge of it and several upon it. It likewise passes under the railroad near the gas works and on to Stevens' run. All of these four drains, as they are now kept, must be condemned as public nuisances.

The drainage of at least four hotels remains to be considered. For the comfort and health of the crowds of people who annually visit Get-

tysburg, as well as for the credit of the place, the drainage from these should be complete. Hotels for the accommodation of the public are quite as important as streets, and it must be apparent that the proprietors cannot make all the improvements necessary without the assistance of an intelligent and liberal town council. Two of these have already laid terra cotta pipes at their own expense into Stevens' run. They have helped themselves and deserve credit for what they have done, but it is easily seen that these efforts may become nuisances in a short time.

Closely connected with the foregoing are the water supply of towns, the privies, the stables, pig pens and slaughter houses which may easily become nuisances, if they are not already such. Sanitarians agree that all attempts to drain cities and towns by open sewers, or by closed ones, in which animal matter is conveyed, have been futile where there is not an abundance of water to flush the pipes and carry the sewage outside the city or borough limits. In your case it seems proper to present for your consideration two schemes, the latter being a modification of the former.

FIRST SCHEME.

Let every step you take be in the direction of underground drainage. This is the plan adopted by all our cities and larger towns. Lay a large pipe along the course of Stevens' run eastward until you reach the limits of the borough. This may be terminated in a compost pile; and to neutralize the above, coal ashes and the scraping of the streets may be thrown into it and utilized on the land in the neighborhood. Begin with a pipe at the corner of Chambersburg and Washington streets and connect it with the pipe at Dr. Horner's. Lay a pipe also on Railroad street to take up the drainage at Delaps. Afterwards lay a similar pipe down Carlisle street from Centre square and take in all the surface drainage of Baltimore and Railroad streets. In like manner when you have the funds lay a pipe down Stratten street, taking in all the surface water of York street. If you adopt this plan the next generation will praise you, and I have no doubt that the citizens immediately interested will subscribe liberally. This system provides for complete drainage of four hotels and the privies of many private residences. The borough, of course, pays only for the main pipes in the streets. In this case the borough has nothing to do with private property, except to obtain permission to lay a large pipe along side of Stevens' run. For several months each year a larger amount of water will be required in the houses from the reservoir to carry away all excrement in the pipes.

SECOND SCHEME.

(1) Provide for and assist in the drainage of your principal hotels by laying a ten or twelve inch terra cotta pipe in the ground near the edge of Stevens' run, so that the proprietors of these hotels and others may

H. *Hotels*

S. *Springs*

C. *Churches*

K. S. *Railroad Station*

S. H. *Slaughter House*

~~~~~  
*Drains*

SOUTH

WEST

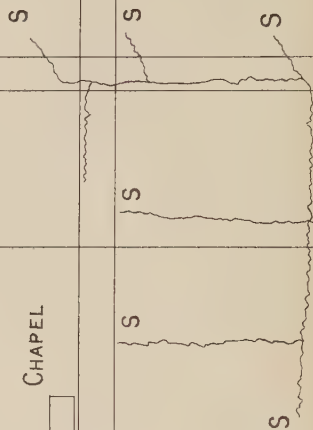
CENTER OF  
GETTYSBURG PA.

STRATTON ST.

BALTIMORE ST.

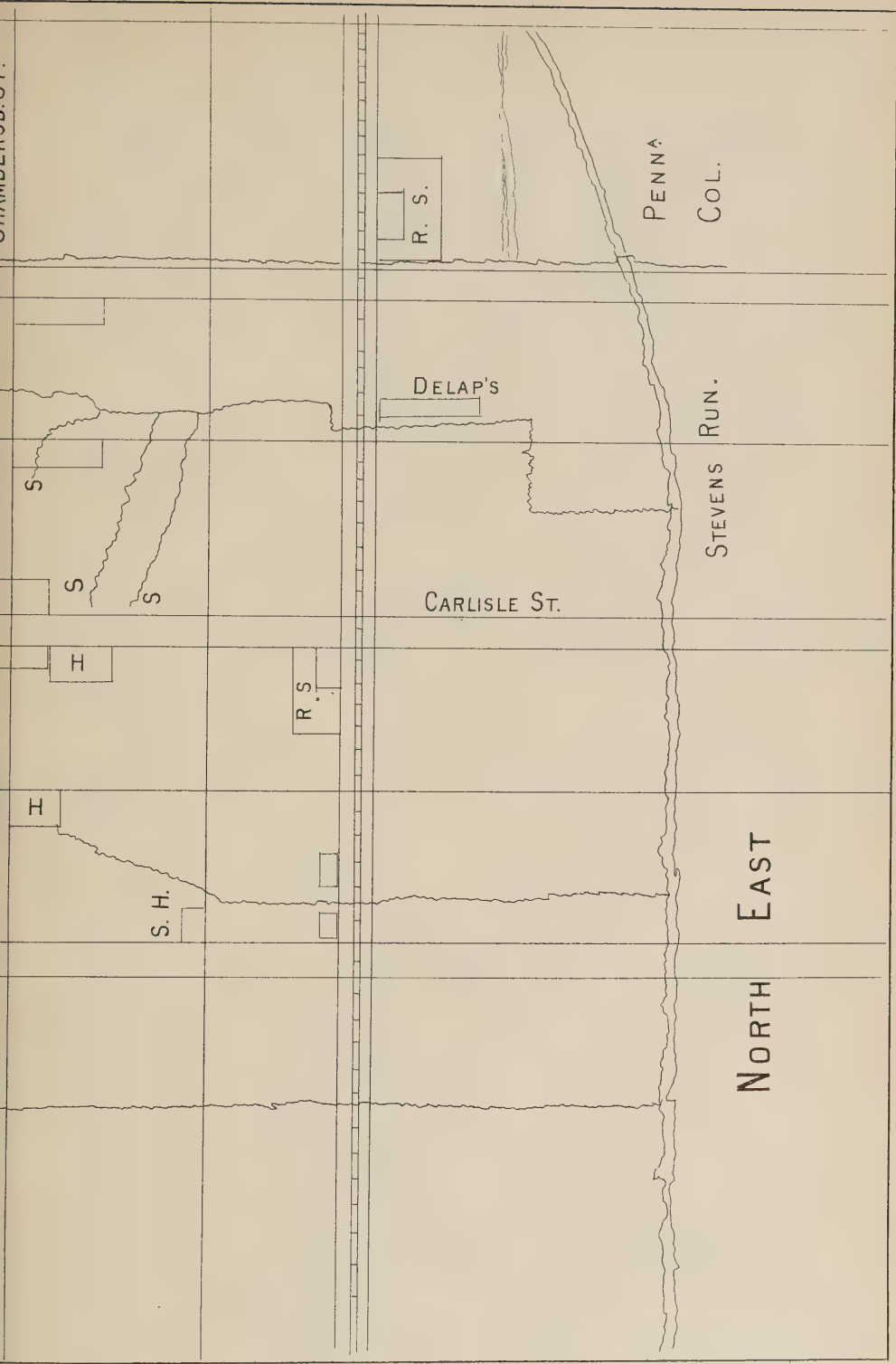
WASHINGTON ST.

CHAPEL





CHAMBERS ST.



CARLISLE ST.

DELAP'S

PENNA  
COL.

STEVENS  
RUN.

NORTH  
EAST

S. H.

H.

S.

S.

H.

R. S.

R. S.



connect their water closets with it, and not make a nuisance out of the run. The proprietors will no doubt approve of this. The public health makes this modification imperative.

(2) Exclude from all other drains, open or closed, the contents of privies, pig pens, stables and slaughter houses, and improve them so that the rainfall and water of the springs may pass directly into Stevens' run.

(3) Make two underground drains across Centre square so that the surface drainage of Baltimore street may pass directly down Carlisle street and under the railroad.

(4) Extend and improve the drain which passes under the railroad and close by the residence of Mr. Delap, so that it may no longer be a public nuisance.

(5) Remove entirely from the center of your borough the slaughter house and cattle yard known as Codorus'.

Whether you adopt the first or second scheme it is necessary—

(6) That you purchase for the use of the borough an odorless excavator, to be under the exclusive control of the borough council: that you employ a corps of workmen who shall be under the direction of your sanitary committee, and whose special work shall be the removal of the contents of privies.

(7) All surface privies and all others whose contents are within one foot of the surface of the ground, including those which allow their contents to escape into the soil, are hereby declared nuisances.

(8) Your attention is also called to the construction of small privies in proportion to the size of the lot of ground and the size of the dwelling house on the same, to be made of well-burnt brick and cemented.

(9) Connected with the proper construction of privies is the use of disinfectants in them to prevent diseases, as chloride of lime, pulverized copperas or slacked lime. The discharges of persons sick with typhoid fever, diphtheria, scarlet fever and other contagious diseases should not be thrown into a privy, but should be immediately buried and covered with coal ashes.

(10) Perhaps the most difficult matter a borough council has to regulate is the keeping of pigs, and we suggest the following: Require all persons to obtain a permit and to pay twenty-five cents for each pig kept, the council engaging to pay this sum of money to their corps of workmen for keeping the pens in a sanitary condition.

(11) Until you receive further instructions from the State Board of Health, to which I am required to report the several nuisances mentioned, I beg you to make use of the means herein suggested for the abatement of the same without delay.

7—INSPECTION AT SANDY LAKE, MERCER COUNTY.

By A. A. WOODS, M. D., *Medical Inspector.*

I proceeded to the town of Sandy Lake on March 11. In consultation with Dr. Cooley and Mr. Rose, chairman of the town committee, I took a rough draft of the town, the lake and the surroundings. In company with several gentlemen of the town I went over the place on foot, visited the lake and swampy ground between the lake and town and walked one mile down the creek below town on Wednesday. I also secured from the physicians and undertakers the number of typhoid deaths in 1890, together with the deaths from all causes.

On Thursday we drove three miles down the Big Sandy creek, wading the creek on foot at one or two places, and examined the submerged flats thoroughly. The results of the investigation are as follows. We will take them in the following order:

- First.* Rough draft of Sandy Lake and vicinity.
- Second.* Deaths in Sandy Lake in 1890 with death rate per thousand.
- Third.* Topography of town and surroundings and effect of floods.
- Fourth.* Prevailing diseases learned from physicians.
- Fifth.* Proposed and possible remedies.

*Second.* Deaths occurring in the town during the year 1890 together with death rate per thousand:

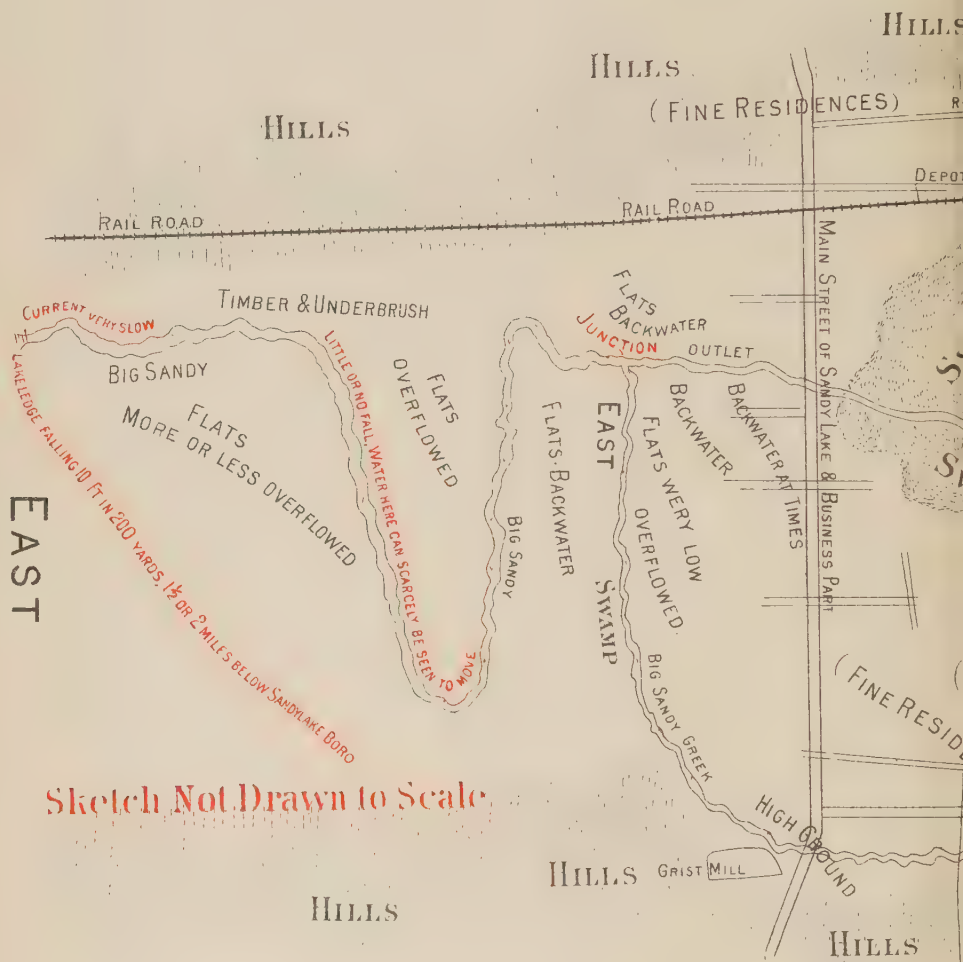
|                                                                                                              |       |
|--------------------------------------------------------------------------------------------------------------|-------|
| Deaths of typhoid diseases, either typhoid fever or typhoid malaria, . . . . .                               | 10    |
| Total deaths in the year 1890 from all causes, . . . . .                                                     | 22    |
| Estimated population of the town by citizens, . . . . .                                                      | 800   |
| Estimated population by inspector arrived at by roughly counting families and multiplying by five, . . . . . | 650   |
| Rate per thousand, . . . . .                                                                                 | 34.84 |

*Third.* The topography of Sandy Lake and vicinity together with effects of floods.

By glancing at the rough map sent herewith it will be seen that the main street of Sandy Lake is three feet eight inches lower than the lake of the same name. That the outlet from this lake crosses the main street near the middle of the town, nearly all of its fall being just where it leaves the lake, and it flows through the town very sluggishly, like a canal and has banks only four or five inches above common water level. It will be seen that the Big Sandy creek swings around the north end of the town where it joins the outlet stream and continues on down the valley as the Big Sandy. At this junction is where back water commences during all floods, and even commonly heavy rains. Both streams bring down a great deal of swamp *débris* and vegetable mould. This junction of the streams on the flats is almost on a level with the town,







Sketch Not Drawn to Scale

WEST



and is only about five hundred feet from the center of the main street. The main street itself having been raised by repeated filling. All cellars in this part of the town are below the creek beds at their junction.

The soil here is a loose vegetable mould, with some clay, consequently when the water begins to back up from the junction it at once percolates through the ground and enters all cellars and low places. When it gets higher it frequently overflows this portion of the town. It does this every year and sometimes twice, to a greater or less extent. It is alleged that there have been some very severe overflows in the last two or three years, and the marks above the town show it.

The only portion of the town not reached by these floods and the percolating of the water through the ground is on the hills that wall in the valley on the north and south. Several streets run up these hillsides, and many fine residences are built there, but the business portion of the town is all on the flat. The houses on the hillside while not flooded seemed to be reached by the malaria as much as the others. Every cellar that I saw in the town had from three to four and one-half feet of water in it. Most all other buildings on the flat that did not have cellars had water standing under them. At the time of my arrival on Wednesday the water was moderately high, there having been a thaw but no rain. Wednesday night and Thursday a drizzling rain fell and the creeks rose higher. Now from the point of junction of the Big Sandy and the outlet stream the flats extend eastward fully three miles with but little fall, being almost dead level, and very low. A good part of it is covered with timber and underbrush. The creek winds through these flats crooking and looping a great deal. These flats seem to be overflowed nearly all the time. On Wednesday I saw hundreds of acres of this flat land overflowed with water from an inch to a foot deep.

It is only for a few weeks in each year that they dry out. About two miles down the flats and east of the town the creek begins to fall over rocky ledges. At one place in a deep gully near a point called Smith's railroad crossing, the ledges fall, at a rough guess, about ten feet in two or three hundred yards. From that point on eastward there seems to be little overflow of the valley and few flats.

*Fourth.* The prevailing diseases are sufficiently indicated by the large number of deaths of a typhoid character. It is claimed by the physicians that malaria is almost universally prevalent. Rheumatism exists largely. All diseases, rheumatism especially, require quinine in large quantities.

*Fifth.* Proposed and possible remedies: What the people suggest and ask for is to have the creek straightened and the fall from where it begins a mile and a half or two miles below and east of Sandy Lake carried up to at or near the junction. This would deepen the channel, raise the banks and give a swifter current, and any overflow would be



some distance from the town. This work could be done but it would cost a great deal of money. At a rough guess I should say \$15,000 or \$16,000.

The Sandy Lake itself is tinctured and colored from the mineral matter drained into it from the mines at Stoneboro'. All the fish have been killed, and this has an additional injurious effect upon the inhabitants. If possible the mine owners should be compelled to carry their drainage down beyond Sandy Lake to the creek. It could be done for about \$2,000.

#### CONCLUSION.

Sandy Lake is in a bad sanitary condition and needs relief. It should have it if can be secured, but a state appropriation would be necessary. A good engineer could tell better whether the proposed work upon the creek would be efficacious. Some means must be found to check the liability to malarial, typhoid and rheumatic diseases at Sandy Lake, or the business portion of the town, which has much capital invested in store and business blocks, must be abandoned.

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#### 8--INSPECTION AT CHESWICK, ALLEGHENY COUNTY.

By J. R. THOMPSON, M. D., *Medical Inspector.*

PITTSBURGH, *March 27, 1891.*

My report of investigation of supposed cases of cerebro-spinal fever at Cheswick, is as follows: There were two (2) deaths in the family of Samuel Remally. The deaths were so sudden that Dr. Orr, of Cheswick, had little time for diagnosis, but thinks they were cases as reported. The symptoms were vomiting, pains at back of neck, delirium and fever. First child ill only four hours; second child nine hours. Ages of the children five and seven years. Condition of the premises fair, but I ordered a general cleaning up of house and surroundings.

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#### 9 INSPECTION AT MEDIA, DELAWARE COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

Subject of complaint, the exposure of bedding from a case of diphtheria on the lawn of a boys' school. Also, the drainage of said school. The case was one of malignant diphtheria which died about one month prior to this inspection. The boy was removed from the main building immediately upon the diagnosis of his case to a cottage on the grounds used as a hospital. Immediately after, the room occupied was emptied of its contents and all that part of the building was thoroughly ventilated and disinfected under the supervision of an expert. Every means

were employed to prevent the spread of contagion. After the death of the boy all his bedding, mattresses, etc., in both rooms were burned. Chloride of lime, chlorine gas and sulphur were promptly and thoroughly used in all the rooms of the cottage, so that the building at the time of this inspection still smelled strongly of these gases. The buildings were cleansed and scrubbed from top to bottom. There was no possible opportunity for any continuance of the disease. An inspection of the school and other buildings and surroundings showed everything in admirable order. No water closets open into the building. All are shut off by the best plan to prevent the intrusion of sewer gas. The outside drain pipes are separated from the building and open to the air. No pipes connected with this drain, either from the kitchen, the dishery or the milk house. The floors in the milk house are cemented and clean. All vegetables were kept out of the house. Earth closets only, are used in the cottage near the school. An open body of fresh water is supplied from a spring near, by means of a pipe running into it. A careful inspection of this showed nothing flowing into it but pure spring water.

Everything connected with the school, its surroundings, etc., are eminently worthy of commendation.

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#### 10—INSPECTION AT CHESTNUT HILL, MONTGOMERY COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, *May 28, 1891.*

Subject of complaint: Condition of premises as resulting in malignant illness.

The history of this house showed two years ago a case of scarlet fever and a case of diphtheria. Both were moderately severe. The next fall the family of Mr. P. C——— moved into the house. They had no illness save influenza for eighteen months. In March, 1891, the well overflowed and then drained into the cellar. Although the well was emptied in the usual way, it soon refilled and a new well was dug to drain the old well. At this time Mr. C. and the cook were taken quite ill with diphtheria, and in fear of further trouble, the children were removed and did not return until all were well. But in a week or more, the eldest child was attacked with a very malignant form of scarlet fever, and died in sixty hours.

At the time of my inspection the house was vacant, and exhibited strong evidence of the thorough disinfecting process to which it had been subjected. Hence in the house itself no odor was evident other than that of the chemicals employed. The cellar showed where repeated overflows from the cesspool had occurred, thoroughly infecting the soil at this place, the overflow being retained owing to the tenacious

red clay acting to retain it as in a pocket. About ten feet away was the heater with all its doors opening to this point, thus ensuring the thorough dissemination of the germs of disease to all parts of the house.

I would therefore recommend that the ground in the cellar where this overflow had occurred be completely removed to a depth sufficient to ensure the removal of all the contaminated soil, the disinfection of the excavation, and that it then be filled with fresh earth. That all the plumbing likely to be infected with disease germs be removed, and its replacing with new material. That the cesspool well be made tight so as positively to prevent any other overflow.

I would be extremely doubtful of the safety of any one who would be exposed by living in these premises.

## 11 INSPECTION AT PRESTONVILLE, MONTGOMERY COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

PHILADELPHIA, *July 6, 1891.*

Subject of complaint: Malignant diphtheria at Prestonville, Montgomery county.

Prestonville consists of about 150 houses, with a population of 750.

The disease has prevailed about five or six weeks, the first case occurring in the family of C. G—— at the southern end of the village. The father, mother and six children were ill one after the other, with the death of four of the children. The first death occurred June 8, aged three years and a half, illness five days. The next aged nine years, June 20; then one on June 22, aged six months, and the last on July 4, aged eight years. Two other children are convalescent, the elder, aged twelve years, a girl apparently rapidly improving; the other, a boy aged six years, is still troubled with nasal discharge, and looks in a doubtful condition. The father had quite a severe attack but is well. When the disease began to show such severity, the father built a board shanty and all lived in that, and finally a shelter tent was placed at the end of the lot where the children were nursed and still sleep.

The only other cases were in the family of Mr. D——, at the upper end of the village, and undoubtedly were the result of contagion, the sick children of G—— having come there on an errand, and the one here that died, was on the porch a short time with them. This house and surroundings were in an excellent condition. Disinfectants had been freely used, and the only thing objectionable was the well, an ordinary country privy, which was ordered to be disinfected and cleansed, lest any germs of disease might remain from its use during the illness that had occurred.

In the house of Mr. G—— the paper had been removed and the walls were being cleansed with the sublimate wash, and I was assured that

the family would remain in the tent and shanty till they removed from the place. The cellar was damp and had an unpleasant odor, and as I was informed that bones and other decaying matters had been allowed to accumulate there, and the drainage was very bad, I am satisfied that this was the origin of the attack.

I directed that the cleaning, etc., should be continued, the cellar thoroughly drained, and the leakage into it of water should be prevented. I was assured that this should be done at once.

The soil is brick clay covered with some six to eighteen inches of loam.

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## 12—INSPECTION OF CARBONDALE.

By L. H. TAYLOR, M. D., *Medical Inspector.*

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WILKES-BARRE, PA., *August 8, 1891.*

I visited Carbondale yesterday for conference with the board of health and other citizens in reference to the sanitary condition of the city. Since the inspection, by order of the State Board of Health in 1888, much advance has been made in a sanitary way. For instance, about a mile of vitrified brick pavement has been laid in the center of the town, and adds materially to the appearance of the streets. At that time there were no sewers; now the first district is largely sewered, about 16,000 feet having been laid. The opening of this sewer, however, is decidedly objectionable as it is not carried far enough into the bed of the river.

The health officer informed me that he could have this remedied at once and would do so.

Plans for sewerage the second district, which embraces a considerable portion of the city further northward, had been prepared by the city engineer, accepted by the council and ordinance passed adopting the same, but it failed of being signed by the mayor, by about twelve hours, to become a law before the passage of the so-called "Pittsburgh bill," which was signed by Governor Pattison before the Carbondale ordinance. They consider that the passage of this bill prohibits their going forward with their work until they have a petition for the same signed by a majority of the property holders. If so, then I do not see how the State Board of Health can be of any assistance in the matter.

The plan of sewerage the city I consider in the main a good one, excepting that it must leave out a portion of the Fifth ward in the northern part, which cannot be sewered at all by this scheme, on account of the slope of the ground being in the opposite direction to that in which the general extent of the city drains. This part of the Fifth ward is estimated to contain about a hundred inhabitants, and from the nature of things will not be largely built up for many years.



A better plan for the whole city would be a large trunk sewer laid along the Lackawanna river, which by means of laterals entering it would accommodate the whole city, but I am informed by several citizens that the cost of this is so far beyond their means that had they waited until this plan could be adopted they would have had no sewers for many years. This trunk sewer plan is favored by C. E. Spencer, president of select council. Owing, however, to the opposition to this plan on account of expense (otherwise it is decidedly the preferable one) I would recommend carrying out the plans as at present prepared by the city engineer, Walter Frick, and later on provide for the disposal of the sewerage of the upper part of the Fifth ward by precipitation or some other method. This is suggested by Mr. Frick.

Many of the abominations mentioned in my report of 1888, in the shape of shallow privy vaults, still exist, but owing to the good work done by the local board of health the objectionable features of these have been largely removed. There is still much to be done, but if the local board, which was reorganized in September, 1890, but receive the cordial support of the city councils, and their suggestions fully carried out, the city of Carbondale will not suffer from insanitary conditions. There are at present no nuisances to be abated, unconnected with the lack of sewers. The great need of the city is a complete system of sewers, and I would recommend as most desirable the laying of a brick sewer in the bed of the Lackawanna river from the northern limits of the city, extending to a safe distance below the southern limits. If on account of expense this cannot be done I would recommend the carrying out of the present adopted plans for sewerage of the main part and provide for the upper part of the Fifth ward in some other manner than by emptying into the Lackawanna river.

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### 13—INSPECTION AT GLEN RIDDLE, DELAWARE COUNTY.

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By W. B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, *July 13, 1891.*

Subject of complaint: Station of Pennsylvania railroad at Glen Riddle, Delaware county.

The upper part of this house is used as a railway station and the rest as a dwelling. Its history has been bad from the outset. Seventeen years ago typhoid fever attacked the inmates almost immediately after it was built and occupied. There were three cases with two deaths. Again some two years ago a case occurred, and now diphtheria has attacked the inmates. There were four cases in the early part of the spring, and two in June or July. Of the last, one died and another is yet in a doubtful condition.



The cellar, as far as can be known, is clean, recently white washed, no vegetables, save a few freshly dug potatoes, but there are evidences of leaking into the cellar of water from the walls on two sides. This is said only to occur when a heavy rain falls, and is supposed to come from the yard back of the house. The kitchen, which is mostly used as a living room, has no cellar or any form of ventilation beneath its floors. A pipe conducts the rain from the roof into the soil beneath this kitchen but no outlet or pipe is known to conduct this flow away, but it is thought to sink into the ground which is extremely porous. The yard back receives the overflow from the road at all times, and all this must pass beneath the kitchen floor. Some idea may be obtained of the nature of this flow when it is known that recently the contents of some very foul cesspools were hauled by here and large quantities dripped out on the way, of course to be carried down beneath this floor. The public road is much above this yard and drains into it.

The cesspool of the premises is the ordinary country privy, not near the surface as to its solid contents but undoubtedly a large mass must have accumulated, as it has never been cleaned since the house was erected. It is about twenty-five feet from the drinking well and twenty feet from the house.

I am satisfied that the unsanitary condition is largely due to the drainage under the floor of the kitchen. Undoubtedly what flows here remains in a stagnant pool until it sinks into the earth beneath. As the children are constantly here and close to the floor they are thus exposed to the emanations which pass through the cracks, and are thus breathing a sewer air.

I would recommend that this floor be removed, the drainage made to pass off by some form of closed pipe, to a safe place beyond the house.

That the soil thus contaminated be thoroughly removed, disinfected, if necessary, and the proper measures be instituted to allow free ventilation beneath the kitchen floor. As the station has been very wisely removed temporarily, I would urge that this place be not again used as a station until these measures are carried into effect, the illness entirely gone and the place most carefully disinfected.

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(b) Letter from the Secretary of the Road.

PHILADELPHIA, PA., *July 17, 1891.*

DEAR SIR: I have your favor of yesterday, with reference to the unhealthy condition of the station at Glen Riddle, Delaware county, and I have referred the same to our general manager, who will no doubt, take prompt steps in the matter.

Faithfully yours,

J. C. SIMS,  
*Secretary.*

Dr. BENJAMIN LEE, 1532 Pine Street, Philadelphia.

## (c) Letter from the General Manager.

PHILADELPHIA, PA., *July 23, 1891.*BENJAMIN LEE, M. D., *Secretary State Board of Health, 1532 Pine Street, Philadelphia, Pa. :*

DEAR SIR: Upon receipt of you favor of the 16th instant, I brought the matter at once to the attention of the local officers of our Central Division, Philadelphia, Wilmington and Baltimore railroad, and I am glad to know that we were aware of the condition of Glen Riddle station, and had taken steps towards improvement of the same. I am satisfied from what I learn that no steps will be spared in the direction of thoroughly disinfecting the present building and in arranging proper drainage, etc.

Yours truly,

S. M———,  
*For General Manager.*

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14 INSPECTION AT BITNER'S, LANCASTER, LANCASTER COUNTY.(a) By P. A. HARTMAN, M. D., *Medical Inspector.*HARRISBURG, *July 19, 1891.*

The property against which complaint is made is on the Columbia pike, a suburb of Lancaster, Pa., and belongs to a Mr. B———, in whose family have been four cases of typhoid fever. The enclosed "rough sketch" will show how the property is drained of its sewerage and how supplied with water. There are nineteen (19) houses, most of which are double, on the plot.

The history of the fever is an old one, it having been proved that there were a number of cases a year ago or more. The cases occurring now have a clear and distinct connection with those of the year before, and if ordinary precaution and common judgment had been used there would have been most likely no cases to report now.

The houses have inside water closets, all of which empty into a common sewer, which carries the sewerage back from the houses about eighty yards into an open trench at least seventy-five feet long, here it rests, except what percolates through the ground, or evaporates, or what runs upon other people's property. To say that this trench is offensive to sight and smell is to put it mildly.

In this locality there is no sewer system, so that there is but one of two ways to remedy this nuisance.

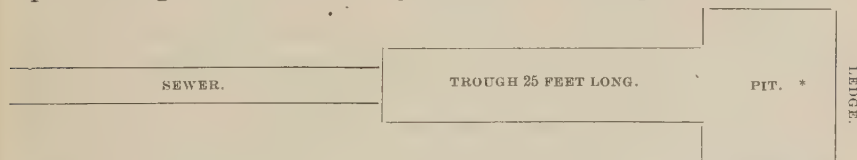
I would suggest that Mr. B———, the owner, be compelled to shut up the "open trench" completely, and to cover it over with lime and

earth; that he build properly constructed cesspools in the yards of the houses, or that he sinks a well, common to all, properly cemented, into which may drain the sewerage, which can be removed at such times as may be necessary.

The drinking water is not contaminated by the bad drainage, the well being higher than the trench. I am glad to say there have been no fatal cases among the sixteen reported.

(b) Inspection by S. T. Davis, M. D., Member of the Board.

On the 25th instant, I made an inspection of the properties at Bitner-ville, a suburb of Lancaster, against which formal complaint was made, brought about by an epidemic of typhoid fever. Inasmuch as Inspector Hartman, of Harrisburg, made an inspection on July 19, 1891, I deem it but necessary to note the present condition of the premises, and make, as it were, but an additional report. Nineteen houses in one row all having good water closets, and all in good order; flush water adequate; pressure good or sufficient, all empty into a common terra-cotta sewer eighteen inches in diameter, alongside of which is a twelve-inch terra-cotta sewer pipe. Sewer empties eighty yards from rear of houses into a plank trough three feet wide by sides six inches high.



This trough is twenty-five feet long and discharges its contents over the top of a pit twelve feet deep by twelve feet wide covered with plank, and planked up on all sides, except the bottom, which Mr. B—— tells me is down to shale rock. At the lower margin of the top of box is a ledge, and in the middle is a small opening for the fluid contents of sewer to enter (marked thus \*). The location of the sewer being at the lowest part of the surface. It is where, in case of rains, the surface water naturally flows, the receptacle becomes filled and overflows, when it passes down to the next field (now in corn) and is carried off by a dry run, or only a water course in wet weather. The object of the open sewer of twenty-five feet long by six inches high was, and is to afford, a proper place to utilize and disinfect the solid matter. I think the trouble was that Mr. B—— neglected to do this in the early spring months. Now there is no odor whatever, and as far as the surface water flowing over the adjoining property, that cannot be prevented, as it is a natural wet weather water course. In my opinion if he disinfect the sewerage as it flows from the pipe he is doing all that he can, but this he should be compelled to do as often as is necessary.

(c) **Supplementary**, by S. T. Davis, M. D.LANCASTER, PA., *October 13, 1891.*

BENJAMIN LEE, M. D.

DEAR DOCTOR: I this day visited Bitnerville a second time, and as there has been no rain for several weeks, and of course no surface water, I had a good opportunity of seeing how much sewage water was discharged across the line dividing the properties of Mr. B—— and his neighbor. From the appearance of the ground I am confident there has no fluid passed over the line since the last rain. There is no evidence whatever of any sewage on the top of the ground. I told Mr. B—— to open up his vat and clean it out, and suggested an automatic trap which would close as soon as a flush from a storm would come.

(d) **Analysis of Water.**FRANKLIN AND MARSHALL COLLEGE,  
LANCASTER, PA., *May 30, 1891.*

I examined a sample of potable water handed me by Mr. B——, and found it free from *ammonia*, *nitrites*, *nitrates*, *sulphuretted hydrogen* and organic impurities. There were microscopical traces of proto-coccus present, such as are carried into every well water by the inflowing water, but not sufficient to be in any way harmful. *Chlorine* present in the proportion of 1.2 grains per imperial gallon, is due to the chlorides in solution, and therefore not injurious. The permanent hardness of the water I find to be eight per cent., showing a considerable amount of carbonate of lime.

R. C. SHIELDS.

## 15—INSPECTION AT MILLVILLE, COLUMBIA COUNTY.

By WM. LEISER, M. D., *Medical Inspector.*LEWISBURG, PA., *July 24, 1891.*

I visited Millville, Columbia county, July 23, 1891, to investigate the outbreak of typhoid fever.

The town is a healthy village of about six hundred inhabitants. About two years ago there was a case of typhoid fever in the family of Dr. H——. Again this last May, 1891, there was another case, a laborer, in the family of Dr. H——, and a few weeks after the man that came to take his place was attacked with the disease. Since then four or five railroad train hands and a depot watchman have had the disease.

Dr. H——'s house and barn are situated on a hill about one hundred yards from the station, which is down in a flat. About half-way between



Dr. H——'s and the railroad station, and at the bottom of the hill, there is a spring from which the train hands have been getting their drinking water.

Dr. H—— is reported to be using his abandoned well for a cesspool, and the bottom of the well is about on a level with the spring above mentioned. The inference from these facts would be, viz:

That the first case was introduced into Dr. H——'s house from without; that the typhoid poison remained in the cesspool and finally gained admission into Dr. H——'s drinking well and into the spring at the bottom of the hill, and made them both infectious.

I should advise that the spring should be made inaccessible. It has been abandoned by the train hands, and no new cases have occurred.

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(b) Letter to Chas. S. Ely from the Secretary.

*July 27, 1891.*

MR. CHAS. S. ELY, *Millville, Pa.:*

DEAR SIR: The report of Medical Inspector Leiser shows clearly that the origin of the typhoid fever epidemic, with regard to which you requested the interposition of the State Board of Health, was a spring at the bottom of a hill near the residence of Dr. H——, and that this spring is probably infected from Dr. H——'s cesspool, which is reported to be simply an abandoned drinking well. Dr. Leiser advises that this spring be made inaccessible, and in this recommendation the State Board concurs. Probably the best plan to adopt for this purpose would be to have it filled up with large stones. Kindly inform me what railroad Millville is situated on, as I desire to inform the authorities of the road of the danger to their hands.

Yours very truly,

BENJAMIN LEE,  
*Secretary.*

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#### 16—INSPECTION AT TULLYTOWN, BUCKS COUNTY.

By W. B. ATKINSON, M. D., *Medical Inspector.*

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Subject of complaint—Slaughter House: This is a small place where calves, sheep and large cattle are killed on a small scale. About three or four of the latter a week. Although the owners of the place were absent and the house securely fastened so as to prevent a glimpse of its inside, yet everything around showed it to be in a very unsatisfactory condition. There were a few pigs in the adjacent pen which were fed on offal and blood, and the pen was nothing but a small piece of ground



fenced in, the soil covered with straw, etc., with no evidence of any effort to provide for proper cleanliness.

I was informed that there was no attempt to make the place a proper slaughter house, there being only a board floor, through the crevices of which the blood, etc., made a way to the soil beneath, where it was allowed to remain and pollute the air. A cow with calf was slaughtered and the dead calf was thrown out whole to the hogs and allowed to remain until they disposed of it. Drs. Walton and Sands, Mr. Shaefer and Mesdames Walton, Carlin, Moon and White met me and agreed in the statement as to the unpleasant odors constantly arising from this place, and that they were often compelled to close windows and doors, both night and day, to avoid them, and that several of them had been made sick thereby. All of these lived within one hundred yards of the place, which was close to the office of Dr. Walton.

In your absence, and having failed to meet the proprietors of the place, I wrote to them suggesting the importance of at once removing it, enclosing a copy of the provisional regulations, and asking immediate attention to the matter. Drs. Walton and Sands have promised to inform me as to the action taken in the case.

The constable is Geo. Lynn; the squire, T. C. Ivens, Falsington P. O.

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(b) **Supplementary Inspection at Tullytown, Bucks County.**

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By W. B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, *September 24, 1891.*

Subject of complaint—Slaughter House. The slaughter house had been cleaned, the pig pen removed, and a cement floor had been laid, and some repairs done to the weather boarding and a roof was about to be put on it.

The owner was about to build an additional room to use as a hide curing place, this was to have also a cement floor.

The occupants disposed of their hides and bones each week by having them hauled away. They had no means of getting rid of the offal, so I advised them to obtain the aid of a farmer who would agree to carry all away and bury it at a distance from any habitation, first covering it with lime. They and the proprietor promised to carry out my instructions as to cleanliness, and not to allow the offal to be fed to pigs, and not to keep pigs on the premises.

## 17—INSPECTION AT NICHOLSON, WYOMING COUNTY.

By LEWIS H. TAYLOR, M. D., *Medical Inspector.*

WILKES-BARRE, PA., *August 1, 1891.*

I to-day visited Nicholson, Wyoming county, to inspect the sanitary condition of a creamery and a tannery in that borough.

*First, as Regards the Creamery.*

I find that it is situated very close to the D. L. & W. railroad, and that its refuse is discharged by means of an underground sewer through Oak street into Martin's creek about two hundred or two hundred and fifty yards away. The end of this sewer pipe did not extend into the bed of the stream, and the discharges, rotting in the sun, were very offensive to those living in the neighborhood. Since the request for an inspection was sent to the Board this pipe has been extended some feet further into the stream, and the nuisance is thus already partly abated. In my judgment it should be extended about fifty feet further into and down the bed of the stream, thus insuring the successful removal of the daily accumulations.

During the hot weather this drain should be flushed daily from the creamery. I think a letter from you to the chairman of the committee making this recommendation would be all that is necessary in the case. The creamery is owned by a stock company who rent it to New York parties. The managing committee consists of Messrs. F. P. S——, C. S—— and G. C——, all of Nicholson.

The sewer was constructed by virtue of a permit from the council, with restrictions that it should be so maintained as to be inoffensive to the community. I assured the secretary of council and citizens that the abatement of such nuisances belonged to the borough council, and was entirely within their power, without the intervention of the State Board of Health. I think, however, a letter from yourself will have a good effect. Davis G. Black is burgess.

*Second, as to the Tannery.*

Martin's creek flows directly through the village of Nicholson and empties into the Tunkhannock. The tannery is situated directly upon the banks of the former, within the borough limits, and a few hundred yards north of the creamery. It is owned by J. B. T—— & Co., 87 Gold street, New York. A. H. M—— is local manager at Nicholson. The tannery has been located in its present position between thirty and forty years, and no complaint has hitherto been entered against it.

The objectionable features at present complained of are:

1. The escape of powdered tan bark into the stream.
2. The discharge of lime water and lime into the stream.
3. The "soakings" from the softening process.

As regards the first mentioned, that which enters the stream is simply the woody fibre of hemlock bark from which the active principles have been extracted by long process of maceration. In the winter this is all burned; in the summer a portion of it enters the stream and is washed away.

I cannot see that there is anything in this material prejudicial to public health, except in so far as its accumulation in little spots along the sides of the stream might serve as a bed for the detention of other noxious matter.

As to the second, the superintendent and foreman assured me that it contained nothing but lime. It is the lime water in which the hides have been soaked for the removal of hair. The hair and all *débris* is removed and retained before the liquid is allowed to flow into the stream. This is discharged once a week. I cannot see that it is detrimental to public health. The residents claim that it kills the fish in the stream.

As to the third feature, the "soakings" so called, I can readily see the objection to them. This material consists of the water in which the hides are first soaked for the purpose of softening them. It is discharged into the stream twice daily, and no doubt contains some offensive matter, though probably not absolutely deleterious. If some plan could be adopted by which this could be carted away and not emptied into the stream, the chief objection to the tannery would be removed. This could also be carried away by building, at some expense, an underground sewer passing through the village and emptying into Tunkhannock creek some three-eighths of a mile away. All refuse could be thus removed without passing along the open stream through the town. The objection to this might be raised as to its effect on the fish of the larger stream which has been started by the State Commissioners of Fisheries.

There is also on the banks of the stream, just outside of the building, an accumulation of refuse offal, from the flesh, etc., that is left after boiling the fat out. Some of this probably finds its way into the stream, though it is not intended to discharge it thither. Superintendent Moore expressed his willingness to do anything in his power to correct any objectionable features, and stated that he had heard of no complaints until within a very few days.

I would recommend that he be requested to remove at once from the bank of the stream all refuse now accumulated there, and to remove such accumulations at such frequent intervals as to prevent any of this substance entering the stream. From my interview with the gentleman I feel assured that a request from the Board would have all the effect of a mandatory order. He should also be recommended to devise some plan for the removal of the "soakings" other than by the public stream, either by carting away in tanks by farmers to be used as fertilizer, or by underground sewer to the Tunkhannock, which would remove all discharges from the tannery.

(b)—Letter to D. G. Black, Burgess, from the Secretary.

*August 4, 1891.*

Mr. DAVIS G. BLACK, *Chief Burgess, Nicholson, Pa.:*

DEAR SIR: I send by this mail a communication to Mr. F. P. Stevens, chairman of the creamery committee, recommending that the sewer pipe be extended fifty feet further into and down Martin's creek, and that the entire drain be flushed daily during hot weather. Also a communication to Mr. A. H. M——, local manager of the tannery of J. B. T—— & Co., 87 Gold street, New York, recommending that all refuse matter now accumulated on the bank of the stream be at once removed, and that such accumulations as may occur in future be removed so frequently as to prevent any of these offensive substances entering the stream, and that the soakings be either carted away to be used as fertilizers, or be carried by an underground sewer to the Tunkhannock river. In both of these instances your council has all the power necessary to abate these nuisances, even more expeditiously than the State Board of Health. I believe, however, that the recommendations of our Board will be respected, and that it will not be necessary for you to take legal steps in the matter. I should be glad to hear from you after a reasonable interval, whether my expectations have been realized.

Yours respectfully,

BENJAMIN LEE,  
*Secretary.*

(c) Letter of Secretary to J. B. T—— & Co.

*August 3, 1891.*

Messrs. J. B. T—— & Co., *87 Gold Street, New York city, N. Y.:*

DEAR SIR: The attention of this Board having been called by a number of residents of the village of Nicholson to certain conditions in connection with your tannery at that place, which were considered offensive and injurious to the health of the neighborhood, an inspection was ordered. The inspector's report indicates that the complaint is well founded in two respects: First, that the soakings which are discharged twice daily into Martin's creek contain a considerable amount of offensive matter; second, that there is on the banks of the stream just outside the building an accumulation of refuse and offal, which is offensive and some of which finds its way into the stream.

To remedy the first, he suggests that the soakings be carted away in tanks, to be used as fertilizers, or that a sewer be constructed to the Tunkhannock creek, through which all of the drainage of the tannery could be carried, and thus its passage in the open stream through the town be avoided. For the second, he recommends the immediate re-



removal of the present accumulation of refuse and offal, and in future the removal of such material before it has an opportunity to become offensive or to enter the waters of Martin's creek.

I have written to Mr. Moore making these recommendations, and trust that I shall have your active co-operation in securing compliance with them.

Yours very truly,

BENJAMIN LEE,  
*Secretary.*

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(d) Letter of Secretary to F. P Stevens.

*August 4, 1891.*

F. P. STEVENS, *Chairman Creamery Company, Nicholson, Pa.:*

DEAR SIR: The report of Dr. L. H. Taylor, medical inspector, to the State Board of Health, of investigation made by him with regard to a nuisance complained of in connection with your creamery, shows that all that is necessary to be done to remedy the offensive condition complained of is to extend the sewer pipe which conveys the drainage from the creamery about fifty feet further into and down the bed of Martin's creek. To this it would be well to add the precaution of flushing the drain daily through its entire length.

I feel assured that you are equally anxious with myself and the Board to prevent your establishment from being offensive, and that it is therefore unnecessary for me to do more than call your attention to the importance of these measures.

Yours very truly,

BENJAMIN LEE,  
*Secretary.*

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(e) Letter of Secretary to A. H. Moore.

*August 3, 1891.*

MR. A. H. MOORE, *Manager Tannery of J. B. T—— & Co., Nicholson, Pa.:*

DEAR SIR: Dr. L. H. Taylor, medical inspector to the State Board of Health, after a careful investigation of the conditions of your tannery, reports that the only matters which require special attention are the accumulations of fleshings on the banks of the stream, and the flowing of the soakings into the stream. His recommendation is that the refuse now accumulated be removed at once, and that in future such accumulation be removed so frequently as to prevent any of this offensive material entering the stream, and that the soakings be either carted away in tanks by farmers to be used as fertilizers, or that a sewer be constructed to the Tunkhannock creek, through which the drainage could be carried.



Feeling that you are equally interested with our Board in keeping your establishment in the best possibly sanitary condition, I shall be glad to hear from you when you have taken the necessary steps to this end

I am, yours, very truly,

BENJAMIN LEE,  
*Secretary.*

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#### 18—INSPECTION AT SHIPPENSBURG, CUMBERLAND COUNTY.

By R. L. SIBBET, M. D., *Medical Inspector.*

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I proceeded to Shippensburg, Cumberland county, and was kindly received by the borough council and the citizens. After a careful inspection of several nuisances complained of and an interview with several physicians of the place, I learned that about fifty cases of scarlet fever had occurred in that town during the last six months, but only one death from this disease. There had also occurred several cases of typhoid fever during this time, all of which recovered. I was taken to one house in which the fourth case of scarlet fever was convalescing, and to a neighboring house in which the rash was fully developed in a boy of twelve years of age. Both appeared to have a fair chance to recover.

The borough seemed to be in a bad sanitary condition and I suggested a meeting of the members of the council and of prominent citizens in the evening. The sentiments expressed at the meeting were in favor of abating the nuisances complained of, though two of the physicians present thought there was no need for agitating the subject. They appeared to think that fifty cases of a preventable disease in half a year would be better for the profession than none at all.

In presenting orders and suggestions to the burgess and council I insisted, first, upon the abatement of the privy nuisance, by the purchase and use of an odorless excavator and the use of disinfectants. Also that the borough council should constitute or appoint three of their number a sanitary committee whose special duty it shall be to study the subject of hygiene, and thus place the council under the protection and guidance of the State Board of Health.

Second. That another class of nuisances which exists should be abated, namely: Badly kept stables, pig pens and slaughter shops. I insisted that the council should take the reins of government in its own hands, and should require all persons who desire to keep any such conveniences to obtain a *permit* from the council, such *permit* being an agreement to keep such stable, pig pen or slaughter shop in a good sanitary condition.

Third. As there exist several wells of water used by the public which are believed to be in an insanitary condition after heavy rains, I directed that all wells of water within one hundred feet of any privy, pig-pen or stable should be closed.

Fourth. That disinfectants be freely used in every case of contagious disease as directed by the circulars printed and distributed by the State Board of Health.

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(b) Letter of the Secretary to the Burgess.

July 28, 1891.

*To the Chief Burgess, Shippensburg, Pa. :*

DEAR SIR: Dr. R. L. Sibbet, medical inspector, has made a report to this Board of his recent investigation of the sanitary condition of your borough. He reports the following nuisances as existing: Full and overflowing cesspools, filthy stables, pig-pens and slaughter houses, drinking wells so situated as to be liable to pollution.

I heartily endorse all the recommendations which he made in person to yourself, members of the council and other prominent citizens, viz: First. That your council shall appoint a sanitary committee, with full power to enter upon all premises and investigate all nuisances. Secondly. That all privies full to within two feet of the surface should be disinfected, emptied and again disinfected; an odorless excavator be used for emptying the same. Thirdly. That all owners and proprietors of stables, slaughter shops and pig-pens be notified to keep their several establishments and premises in good sanitary condition in accordance with a regulation of the State Board of Health, copies of which I send you. It would be well to have this regulation published in your daily papers for the information of such persons as well as of the public generally. Fourthly. That all wells so situated as to lead to the suspicion of pollution be closed, and the use of water from them forbidden.

Trusting that by the adoption of these measures you will render your borough as salubrious as in former days. I am,

Yours very respectfully,

BENJAMIN LEE,  
*Secretary.*

19—INSPECTION AT CRESSONA, SCHUYLKILL COUNTY.  
(TYPHOID FEVER.)

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By W. MURRAY WEIDMAN, M. D., *Medical Inspector.*

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*July 31, 1891.*

I visited Cressona, Schuylkill County, yesterday afternoon, am sorry to say Senator Keefer was not in town, and by letter I learned he would not be back before Friday. However, everybody was willing to show me around. I found the citizens had organized (July 20) a sanitary committee of five in each ward (North and South) who had made house-to-houses inspection or visits last week, notifying and urging each family to clean, not only the cellars, but the entire premises, and to use disinfectants, and that the councils, although a little slow, had passed an ordinance imposing a fine for neglect or refusal to obey the same.

I regret that Dr. Gray was the only physician whom I was able to meet. Drs. Deckert, Lenker and Weist live in Schuylkill Haven, some few miles away. The town itself is scattered over an area of ground some say one mile and a quarter one way and two miles the other.

With a few exceptions the citizens are alarmed, fully realizing that the "Lord will help those only who help themselves." Here are 1,400 or 1,500 people living in about 350 to 400 houses. Some portions of the town closely built, especially around the hall on Front street. Most of the sick at present living here, although they have been and are scattered over the town pretty well. It is said there are thirty now in the town. Six of whom are in the employ of the railroad company. Of course I could not see all the sick, as my time was fully taken up finding people who could talk intelligently upon the subject. Dr. Morris, of the relief association, is said to have pronounced it pure and marked typhoid fever.

The town depends mainly upon wells fourteen to forty feet deep, and pumps near the houses for water, for cooking and drinking, although some families use hydrants connected with the mains that supply Schuylkill Haven. The privy vaults, four to seven feet deep, are invariably and from necessity situated on an incline above the wells. This is particularly noticed near the hall on Front street, where all the secret societies in the town hold their meetings, and get all the water used by these assemblies from a pump above which, within fifty yards, are seven cesspools.

I found that all the necessary instructions had been given concerning the disposal of the excrement, soiled clothing, disinfection of body and premises, preparation of food, etc.

The officials of the Reading railroad have been active in their efforts to find a cause. Water has been collected by several of their agents, especially by Mr. Doolittle, of Reading, and Dr. Morris, of Philadelphia, which will account for my telegram of yesterday, viz: "Has Dr. Morris, of the P. & R. relief, sent any water to Dr. Cresson for analysis since Saturday?"

All I have to suggest was *continued diligence in seeing that all the mandates and instructions of the sanitary committee and physicians were carried out, the enforcement of all penalties irrespective of person for any neglect or infringement.*

Do you not think that chloride of lime would answer their purpose as well as, yes better, than copperas? then the senses would aid in discovering those who neglect to purify their premises.

I have asked that a list of all the sick, with age, date of sickness, and number in each family and house be made, as I have two theories in regard to the spread of the disease, viz: Impure water and impregnated milk. I propose to demonstrate either by a diagram, and must make another visit next week, which I hope will show the origin of the disease and mode of extension.

I promised to request you to forward, if you have not done so already, to the committee a supply of your instructions for the care of typhoid fever (circulars 18 and 25) having left all I had, and herewith find the names of the committee.

If samples of water are desired send eight or ten bottles, as the water ought to be taken from various localities. Send them to the care of Hon. L. R. Keefer, Cressona.

When did you hear the outbreak began? Some say last fall, others speak of it in May only. I know of one case (Eby) said to be the first case and a "long-road" man, followed shortly by a second and a third, none in close proximity. Two of these were railroad employes known as long-road men.

But three deaths have occurred attributable to the present disease, the funeral of the last taking place during my visit: the services were held in the open air.

At the railroad shops the men use water brought from a dam some miles distant.

Two small creeks (Beaver and Panther) pass through the village. On the latter, in the North ward, are two butcher shops, both discharge blood, offal, etc., into the stream. They empty into the Little Schuylkill. This water is used by cattle in pasture.

Some of the cesspools are near and over these streams.

Council has cleaned the streets and alleys.

A pond of water stagnant opposite the engine house of the railroad company could be drained at little expense.

The strata of rocks in the hills and in the plain (for the town is surrounded by hills) are vertical, how far below the surface I do not know.



In my opinion the cause of all the trouble will be found in impure water or impregnated milk, one or both.

*Sanitary Committee at Cressona*, Messrs. A. F. Dubril, A. P. Burton, Geo. L. Burton, John H. Moore, Spencer C. Wilson, Hon. L. R. Keefer, Chas. F. Beck, Geo. Reed, A. R. Strouch.

Send circulars to these, especially Nos. 18 and 25.

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(b) Letter to Hon. L. R. Keefer from the Secretary.

*July 31, 1891.*

HON. L. R. KEEFER, *Cressona, Pa.*:

DEAR SIR: The report made by Dr. W. Murray Weidman, medical inspector for the Schuylkill district, of his investigation at Cressona affords room for the suspicion that many of the wells may be polluted. I have therefore directed Dr. Chas. M. Cresson, water analyst to the Board, to send to your address six demijohns, which I will request you to have filled from different sources, and returned, sealed, to him at 413 Locust street, Philadelphia. I would suggest that one specimen be taken from a hydrant, one from the pump near hill on Front street, and the remainder from wells the water from which has been used by persons who have suffered from the fever.

I cannot too strongly urge that your committee continue its useful labors with unabated energy, and that you urge upon the council the importance of strictly enforcing penalties for neglect or infringement of your orders. Impress upon the people the importance of using no water or milk for drinking or cooking purposes which has not been boiled.

Trusting that the action which you have taken will result in the speedy abatement of the sickness,

I am, yours respectfully,

BENJAMIN LEE,  
*Secretary.*

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(c) Second Inspection by Dr. Weidman.

*August 10, 1891.*

On last Friday I visited Cressona again. Found that nine new cases had been reported. One more death had occurred. Total of four since the outbreak.

Could find nothing conclusive about milk contagion, as both Mr. T—— and Mr. B—— supply Schuylkill Haven with the same milk as Cressona. Heard of no cases in the former town thus furnished.

The sanitary committee are active and anxious to do everything in their power to get rid of the contagion.

One well was closed and filled, not the Linderman, however, the danger from which the accompanying analysis shows. The report and recom



mentation I have forwarded to Secretary Burton. All street gutters, ponds and yards are being thoroughly cleaned and drained. Recommended the committee to use chloride of lime in cases where they suspected parties were careless. Many persons are cleaning their wells, digging new privies, repairing drains: all appeared to carry out the rules of the State Board of Health. Recommended the use of hydrant water. Gave no directions concerning the wells until I heard from you about the analysis. Have stopped the shipment of water until further advised. Dr. Gray has given me a list of all his cases treated to date. Mr. Doolittle has given me a copy of his report to the railroad company, extracts of which I herewith transmit. Did Dr. Morris, of the relief association, make or have made any analysis of water sent him other than that of Mr. Doolittle? Have asked for all ordinances passed by councils on this subject. Have a list of places where water sent (nine in all) were collected.

REPORT OF ANALYSIS OF WATER BY DR. DOOLITTLE ON CRESSONA EPIDEMIC  
RECEIVED AUGUST 10, 1891.

\* \* \* "The majority of families use water from shallow wells, which from their location would at once arouse suspicion." \* \* \* \*

"That the public water supply of Cressona furnished to the workmen in the P. & R. round house and shops is undoubtedly pure and of excellent quality."

"That the well of C. H. L ———, Front street, should be condemned and closed up immediately. This water was used by Albert D——, who died of typhoid fever, and four other persons using this well (July 27) are sick at the present time. The location and chemical analysis condemn this water as precarious."

"If the cases of typhoid fever continue to increase we would advise recommending the town authorities to close every well possible in the infected districts, which is within five hundred feet of any building or outhouse, until the water from said well has been examined and pronounced harmless by a reputable chemist, who has visited the ground in person."

|                                     | Free ammonia,<br>pts. per mill. | Albuminoid am-<br>monia, pts per<br>mill. | Chlorine, pts per<br>mill. |
|-------------------------------------|---------------------------------|-------------------------------------------|----------------------------|
| Hydrant, blacksmith shop, . . . . . | .0054                           | .022                                      | trace.                     |
| Hydrant, round house, . . . . .     | .0054                           | .034                                      | trace.                     |
| Well C. H. L——, . . . . .           | .0054                           | .120                                      | 57.63                      |
| Well F. J. B——, . . . . .           | .574                            | .300                                      | 77.97                      |
| Well, W. E. N——, . . . . .          | trace.                          | .003                                      | 23.73                      |

“Well of C. H. L——, under kitchen floor, sixteen feet deep, stoned up but not cemented, about one hundred feet from privy, ground gently sloping towards well, water very bad.”

“Well of F. J. B——, about fifteen feet from house, eighteen feet deep, stoned up but not cemented, about one hundred feet from privy, ground gently sloping towards well, water questionable but not positively bad.”

“Well of W. E. N——, twenty-five feet from house, depth could not be obtained, said to be deep; one hundred feet from privy, ground level, water at present date good.”

(d) Letter to G. L. Burton from the Secretary.

August 21, 1891.

MR. G. L. BURTON, *Secretary Sanitary Committee, Cressona, Pa:*

DEAR SIR: I have been waiting to receive Dr. Cresson's report of his analysis of the various waters sent him from Cressona before adding to the recommendation made by you and the people of Cressona in regard to precautions to prevent the further spread of typhoid fever among them. I think it better, however, not to postpone longer my endorsement of all that Dr. Weidman has advised. It seems evident that the wells are the principal source of the disease. Until it can be determined with certainty which of them are safe, the use of all should be abandoned. The water from L——'s is simply rank poison. That should be closed at once and forever.

I cannot too heartily approve your energy in carrying out sanitary reforms and cleaning your town, but these will be of comparatively little use if contaminated water is drunk. No new well should be dug within five hundred feet of a cesspool, and any well now existing within that distance from a cesspool should be condemned until its water has been

analyzed. Analyses can be obtained through our Board for \$5.00 each. The appropriation for our use is unfortunately too small to enable us to furnish them free of expense. I shall be glad to learn from you the present state of the epidemic, and at its close will ask you for a complete history of it from the beginning.

Yours very truly,

BENJ. LEE,  
*Secretary.*

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(e) **Supplementary Report by Dr. Weidman.**

READING, PA., *September 7, 1891.*

Whilst in Schuylkill Haven I learned from Mr. Burton that the fever at Cressona, in Schuylkill county, had abated to such an extent that everybody was happy. I gave him a blue print and have requested the following information, viz:

Number of houses in each square.

Number of privies in each square, and distance from well, if on a higher plane?

Number of pumps in each lot and distance from privy?

Number of cases of fever in each house, male or female, age and date?

Number of fatal cases in each house, male or female, age and date?

How many use pump water and how many hydrant?

Number of cases occurring in members of the societies meeting in town hall?

Number of cases traced to drinking milk or eating ice cream, and where obtained?

Number and location of privies and butcher shops in Beaver and Panther creeks?

I do not think that the wells have been closed—am confident greater care has been taken in the use of water from wells, especially those reported dangerous or even suspicious.

Learned that no cases of typhoid fever traced to the use of milk have occurred in Schuylkill Haven.

Will get from Drs. Dechard and Gray a description of their typhoid cases.

## ANALYSIS OF WATERS FROM CRESSONA, PA.

[Parts per million.]

| No.  | Date.         | Location.                         | Free ammonia. | Albumen ammonia. | Nitrates. | Chlorine. | Remarks.            |
|------|---------------|-----------------------------------|---------------|------------------|-----------|-----------|---------------------|
| 7747 | Aug. 6, 1891, | Panther creek, . . . . .          | 0.055         | 0.055            | 0.343     | 1.084     | Good condition.     |
| 7748 | Aug. 6, 1891, | L. R. Keefer's well, . . . . .    | 0.110         | 0.055            | 1.028     | 35.420    | Suspicious.         |
| 7749 | Aug. 6, 1891, | Hydrant water, . . . . .          | 0.083         | 0.110            | none      | 7.084     | Good condition.     |
| 7750 | Aug. 6, 1891, | C. N. Linderman's well, . . . . . | 2.470         | 0.411            | 7.703     | 85.117    | Cesspool pollution. |
| 7751 | Aug. 6, 1891, | T. J. Bretz's well, . . . . .     | 0.110         | 0.110            | 2.742     | 70.839    | Fair condition.     |
| 7752 | Aug. 6, 1891, | Frank Swigard's well, . . . . .   | 0.137         | 0.110            | 1.371     | 49.588    | Fair condition.     |
| 7753 | Aug. 6, 1891, | Henry Breiz's well, . . . . .     | 0.274         | 0.165            | 3.430     | 92.024    | Polluted.           |
| 7754 | Aug. 6, 1891, | Charles Hummel's well, . . . . .  | 0.137         | 0.137            | 2.571     | 28.336    | Fair condition.     |
| 7755 | Aug. 6, 1891, | A. P. Burton's well, . . . . .    | 0.110         | 0.083            | 0.171     | 21.252    | Good condition.     |

CHARLES M. CRESSON, M. D.

## 20—INSPECTION AT CHADD'S FORD AND COSSART.

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- (a) Preamble and Resolutions from the State Board of Health of Delaware.
  - (b) Laws of the State of Delaware.
  - (c) Reply of Secretary Benjamin Lee, M. D.
  - (d) Inspection at Chadd's Ford and Cossart, by Secretary Lee and William B. Atkinson, M. D., Medical Inspector.
  - (e) Letter to secretary of State Board of Health of Delaware by Benjamin Lee, M. D., Secretary.
  - (f) Notice to Charles D——, Chadd's Ford, to remedy defects.
  - (g) Notice to J. M——, Cossart's Station.
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- (a) Preamble and Resolutions from the State Board of Health, Delaware.

WILMINGTON, DEL., *July 30, 1891.*

Dr. BENJAMIN LEE, *Secretary State Board of Health, Philadelphia, Pa.:*

DEAR SIR: Enclosed please find preambles and resolution of the board of health of the State of Delaware, concurred in by the local board of Wilmington, and the board of water commissioners of Wilmington, Delaware. This is as you suggested in your letter dated July 24, 1891. Since I wrote you, I inspected the piggeries referred to and found them situated on a small stream. One about one hundred and twenty-five yards, and one not more than fifty yards distant from the Brandywine river. Please accept thanks for the attention you have given the subject. I send you a copy of our laws on this subject.

Truly yours,

E. B. FRAZER,  
*Secretary.*

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(b)

OFFICE OF THE SECRETARY OF THE  
BOARD OF HEALTH OF THE STATE OF DELAWARE.

WILMINGTON, DEL., *July 28, 1891.*

Dr. BENJAMIN LEE, *Secretary State Board of Health, Philadelphia, Pennsylvania:*

DEAR SIR: The following preambles and resolutions were adopted by the board of health of the State of Delaware, July 28, A. D. 1891, and concurred in by the board of health of the city of Wilmington, and the board of water commissioners;



*Preambles and Resolution.*

WHEREAS, "It has been reported to the secretary" of the state board of health of the State of Delaware, that certain nuisances exist on the Brandywine river, near Chadd's Ford, on the ground occupied by Charles D——, also a nuisance at Cossart Station, on the Wilmington and Northern railroad in Chester county, and State of Pennsylvania, outside of the limits of the board of health of the State of Delaware, namely: Two piggeries in which are kept 134 and 135 hogs respectively, and that the offensive water which runs from these piggeries flows into the Brandywine river thus polluting the water which supplies the city of Wilmington, Delaware;

*And whereas,* The said secretary has visited these places and has verified the above report;

*Therefore,* It is deemed proper by the president of the state board of health, and by the board of health of the city of Wilmington, and also the board of water commissioners of said city, that a representation be made to the State Board of Health of Pennsylvania, in which state this nuisance exists, asking that such action be taken in the case as to relieve our citizens of the consequences of this very offensive nuisance.

The persons having charge of the piggery at Cossart, are J. B. P——, George N—— and Joseph J. M——, the latter person residing in Philadelphia, Pa.

(Signed) L. P. BUSH, M. D.,

*President of the State Board of Health, Wilmington, Delaware.*

Attest:

E. B. FRAZER, *Secretary.*

JOHN P. WALES, M. D.,

*President, Wilmington Board of Health.*

WILLIAM T. PORTER,

*President Board of Water Commissioners.*

Attest:

J. A. BOND, *Chief Engineer.*

## (b) Laws of the State of Delaware.

[Page 768, Revised Code.]

*An act to define and prevent certain nuisances.*

SECTION 1. That hereafter no person or persons shall cast, put, place, discharge in or permit or suffer to be cast, put, placed, discharged in, or to escape into any running stream of water within the limits of this state, from which stream the inhabitants of any borough, town or city within this state are supplied wholly or in part with water for and as a drink or beverage, any dye stuffs, drugs, chemicals or other substance, or matter of any kind whatsoever, whereby and by means whereof the said water so supplied as for a drink or beverage as aforesaid shall be made and become noxious to the health or disagreeable to the sense of smell or taste.

SECTION 2. Every person offending against the provisions of the preceding section of this act shall be deemed guilty of committing a common nuisance, and, upon conviction thereof by indictment in the court of general sessions of the peace and jail delivery, shall be fined from one thousand to five thousand dollars at the discretion of the court; and in addition to the fine aforesaid the court shall issue an order for the abatement of the nuisance within twenty days after the verdict of the jury upon the indictment aforesaid, and the sheriff of either of the counties of this state in which said conviction shall take place shall, under the order aforesaid, unless the said nuisance shall, before the expiration of the time allowed for the abatement of the said nuisance have been abated, have full power to abate the same, and to this end shall enter on the premises from which the said nuisance proceeded and arrest, stop and put an end to the business from the carrying on of which, or in the process of which the said nuisance was created or carried on, or premises from which the said nuisances proceeded and issued.

SECTION 3. That no person thereafter shall put or place, or permit to be put, placed or used, any privy, hog pen or slaughter house over, or so near that the excrement or offal therefrom shall escape or run into, any stream of running water within the limits of this state from which the inhabitants of any town, borough or city within the limits aforesaid are wholly or in part furnished with water as a drink or beverage; and any one offending against the provisions of this section shall be deemed to be guilty of committing a common nuisance, and, upon conviction thereof in the court aforesaid, shall be fined the sum of one hundred dollars, and the court shall order the nuisance to be abated immediately

Passed at Dover February 4, 1864.

## (c) Reply of the Secretary.

*July 31, 1891.*

Mr. E. B. FRAZER, *Secretary State Board of Health, State of Delaware,*  
*Wilmington, Delaware :*

DEAR SIR: I have the honor to acknowledge the receipt of a copy of preambles and resolution of your board, concurred in by the local board of health, and the board of water commissioners of the city of Wilmington, together with a copy of the laws of the State of Delaware, for the protection of the purity of public water supplies. I note the fact that you have made a personal inspection of the sources of pollution of the Brandywine river on which the preamble and resolutions are based. I will, however, take the liberty of ordering an additional inspection on the part of our Board. I need not assure you that our Board will do all in its power to have this source of contamination of the water supply of so large a population in your state removed. If we had a law as wise and as stringent as your own the matter would be a very simple one. As it is the abatement of this flagrant nuisance may occupy a longer period than we could desire.

I have the honor to be,

Yours very respectfully,

BENJAMIN LEE.

*Secretary.*

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(d) Inspection.

*PHILADELPHIA, August 5, 1891.*

Subject of complaint—Creameries and piggeries at Chadd's Ford and Cossart.

The inspection was made by Secretary Dr. Benjamin Lee and Medical Inspector W. B. Atkinson.

At the creamery of Charles D——, at Chadd's Ford, every part was found in excellent order. So was the piggery, which contained 135 hogs. The only thing to complain of was the fact of allowing all the waste from the creamery and all the ordure from the pigs to run directly into the stream, thence into the Brandywine.

It was the uniform testimony of the owners of the piggeries, and others not interested, that no dead hogs had ever been thrown into the stream, but were invariably buried. Perhaps an objection to the piggery was that the pigs were kept closely in the pens and were not allowed to run out and get the air and sunshine.

The piggery at Cossart's was not quite so well kept, but the floors were cemented so that no leakage could occur. In the large yard attached, about half an acre, a few pigs were loose, and here the soil was no doubt saturated, and in case of rain washing into the stream below could occur. There was no other mode of drainage here. To

prevent this it was suggested that a light embankment should be made along the stream to wholly stop any flow into it. The piggery was about 150 yards from the street. An additional point here was that each yard or pen had a small place into which the pigs could go at will for air and sunshine.

The ordure, etc., from D——'s must be in some way taken away so as to prevent it entering the river.

Attention was asked to the overflow on the meadows. Thus good land is rendered useless with no good results in any way. This should be good, healthy meadow land in place of being a menace to the health in shape of malaria.

It is recommended that the drains be properly opened and kept so, and the sluice gates be opened when a freshet occurs, and thus this land may again be restored to usefulness.

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(e) Letter to Secretary State Board of Health of Delaware, by Secretary Benjamin Lee, M. D.

*August 6, 1891.*

MR. B. FRAZER, *Secretary State Board of Health, Wilmington, Delaware:*

DEAR SIR: In response to the request received from your board concurrently with the board of health and the board of water commissioners of the city of Wilmington, Delaware, I, yesterday, accompanied by Professor Wm. B. Atkinson, medical inspector of the Delaware district, made a personal inspection of the creameries of Charles D——, at Chadd's Ford, and J. J. M——, at Cossart Station, Chester county. The conditions which we found at the first mentioned establishment amply sustained your complaint. The entire drainage of the piggery, containing 134 pigs, passes directly every day into the Brandywine river. At M——'s establishment no drainage whatever was at the time of our visit entering the little stream which flows by the end of the yard attached to the piggery, at a point about 150 yards from its entrance into the Brandywine. All of the manure deposited by the animals in the pens is carted off and used for fertilizing purposes on the farm attached to the creamery. That of the animals which are allowed to run loose in the yard, which covers an area of about half an acre, is not, however, as carefully gathered as it might be and there is a probability that during a heavy rain there may be a certain amount of surface wash into the stream. The reported fact that dead hogs are thrown into this stream or the Brandywine from these establishments was absolutely denied by the parties interested, who assert that all such carcasses were at once buried, and this assertion was corroborated by residents in the neighborhood not connected with the establishments. The carcasses which have been seen floating in the stream must, there-



fore, have been placed there by other persons. It is not at all an uncommon thing for farmers to make this disposition of their dead animals.

The instructions given by our Board are as follows: In the case of Charles D——, that the discharge of the drainage of his piggery into the stream running through his property or into the Brandywine river, shall at once cease. In the case of J. J. M——, that an embankment ten feet broad be made across the lower end of the yard connecting connected with his pens, of such height that no surface wash can reach the stream from the same.

Trusting that these precautions will be sufficient to prevent any further pollution of the river, and that they will be satisfactory to your honorable board, I have the honor to be,

Yours respectfully,

BENJAMIN LEE, M. D.,  
*Secretary.*

(f) Notice of Abatement.

*August 6, 1891.*

MR. CHARLES D——, *Chadd's Ford, Pa.:*

DEAR SIR: After a careful consideration of the conditions existing at your creamery, as found by myself and Medical Inspector Atkinson, in our visit of inspection yesterday, I am compelled to sustain the complaint of the state board of health of Delaware and to pronounce the discharge of the drainage of your piggery into the Brandywine river an unquestionable nuisance, liable to pollute the stream down to the point at which the city of Wilmington makes use of it as a source of supply for the drinking water of its large population. I feel assured from my interview with you that you are the last man to be willing knowingly to poison his neighbor's water supply and I have your assurance that you will abide by the decision of the Board, which is that you at once cease to discharge the drainage of your piggery, through the trough through which it now runs or through any other channel into the Brandywine river. It is scarcely necessary to add that the placing of dead hogs in a stream is absolutely forbidden by our Board. I found at M——'s creamery that the manure is entirely utilized for fertilizing purposes and that they regard it as a fertilizer of great value. I cannot understand, therefore, that there should be any very serious difficulty in disposing of that of your establishment in a similar manner. I do not consider that the washings of the creamery itself or the milk that occasionally enters the stream are likely to seriously affect the wholesomeness of the water at such a distance.

I beg that you will lose no time in complying with these instructions and I shall be glad to know what plan you adopt.

Yours very truly,

BENJAMIN LEE, M. D.,  
*Secretary.*



(g) Notice to Abate.

August 6, 1891.

MR. JOSEPH J. M——, *Cossart Station, Wilmington and Northern Railroad, Chester county, Pa.:*

DEAR SIR: A communication having been received by the State Board of Health of Pennsylvania from the state board of health of Delaware, concurred in by the Board of Health and the board of water commissioners of the city of Wilmington, Delaware, setting forth the fact that the Brandywine river which is used by the city of Wilmington as its source of water supply, was being polluted by the drainage of the piggery connected with your creamery at Cossart Station, Chester county, an inspection of the same was ordered.

This inspection was made Wednesday, August 5th, by myself and Professor Wm. B. Atkinson, M. D., medical inspector of the Board for the Delaware district. We find that while at the time of our inspection no drainage appeared to be passing into the little stream which, running by the end of your yard enters the Brandywine about 150 yards distant, yet it was evident that during a heavy rain a certain amount of polluted surface water would necessarily reach the stream.

The Board, therefore, recommends that an embankment ten feet broad be made at the lower end of the yard attached to your pen, of such height that it will be impossible for the surface drainage of this yard to enter the stream. It is scarcely necessary to add that the placing of dead hogs in a stream is absolutely forbidden by our Board.

The Board feels assured that you are equally desirous with itself, that no industry conducted within the limits of this state should pollute the waters of a neighboring state, and especially when such waters are used for household purposes by a population of not less than 60,000 souls. It will, however, be pleased to receive an assurance from you that such is the case. We learned with much satisfaction from your foreman, Mr. N——, that there was no foundation for the charge that the carcasses of hogs dying in your pens had been thrown into the stream, but that all such are invariably buried. It affords me pleasure to state that a careful inspection of the creamery showed that it is conducted with scrupulous attention to cleanliness and is supplied with all the modern appliances for carrying on such an establishment.

I have the honor to be,

Yours very truly,

BENJAMIN LEE, M. D.,  
*Secretary.*

## 21—INSPECTIONS AT WALLINGFORD, DELAWARE COUNTY.

(a) First Inspection by Wm. B. Atkinson, M. D., Medical Inspector.

PHILADELPHIA, *July 30, 1891.*

Subject of complaint—Drainage from premises of George C——; cesspools of Isaac W—— and W. F——, Wallingford, Delaware county.

A careful inspection of the residence and another house of G. C——, showed that his wash water and kitchen drainage flowed over his own ground and passed into the soil of his meadow. So, too, the same from I. W—— and W. F—— entered the same drain. The cesspool of Worrall had been cleaned some nine weeks ago. As it is an ordinary well the filth can pass into the soil and thence off to the nearest low ground. All the drainage from the houses north of the South Media road runs into a small gutter by a terra-cotta pipe across the road, and then into the meadow as above.

At the house of F——, the cesspools flow into a well a short distance from the house; this is covered completely, and only pumped out when full, say once a year. The kitchen and wash and bath water flow into another well a few feet away, and from this flows through a pipe out to the road across by a drain beneath the road and so down to the meadow. But at the point where this flow crosses the road, the odor is very bad and much complained of by the people who are exposed to it. I am of the opinion that there must be some communication between the well containing the cesspool matter and the well with the wash drainage, which causes this unpleasant odor. Ordinary wash water could not give off such an odor.

G. C—— informed me that he was doing all in his power to prevent any annoyance through his drains, and would shortly turn all into a well now used as drinking water, and use for his house the water from Media. I. W—— had been careful to clean his well, and I found no other cause of complaint.

In the case of the F—— drain, I would suggest that he make a thorough examination of the relation of the two wells and the pipes, to determine if any leakage is taking place. The cesswell not being cemented, would possibly allow drainage of its contents into the other. Hence such a well should be a cemented tank which would entirely preclude any contamination of the soil or drains in any way.

Second Inspection by W. B. Atkinson, M. D., Medical Inspector.

PHILADELPHIA, *September 14, 1891.*

Subject of complaint.—Typhoid fever at several houses. Drain of Mr. J. M. S—, and condition of pig pen and surroundings of tenant house of J. W. P—.

The drain of Mr. S—'s premises runs through the entire length of the farm of Mr. P— into a small creek which flows into a pond used in the winter for gathering ice, and the water of this and the creek is used by the cattle of Mr. P—. As the drain carries the overflow from the entire premises of Mr. S—, and as this is used to receive all the sewage of his premises, including dwelling house, tenant house and stabling, cesspools, wash and bath water, etc., we must expect to find at times, especially after much usage or rains, that this outflow must greatly exceed the ordinary amount. In places, the ground was quite full of dark masses incident to the outflow of cesspool matter.

I would suggest an analysis of the flow as it comes from the pipe at the end of the drain on the ground of Mr. S—. If this shows, as I think it will, the presence of fecal matter, etc., then this drain should no longer be allowed to flow in this manner.

I found a temporary pig-pen on the premises near the tenant house of Mr. P— in a bad condition, also the remains of a former pen and an outhouse, all of which I insisted should be put into a proper sanitary state without delay. I was assured this should be done, and have learned that all cause for objection is now removed.

At the dwelling of Mr. P— I was informed that a daughter was lying ill with typhoid fever.

I found one case at the house of Mr. H—, which I was informed was the fourth in about eighteen months, with one death. Opposite to this house Mr. Isaac W— was sick with typhoid. At the house of Mr. D— there had been two cases, both convalescent. One was claimed by the family to have been brought from Wayne. Mr. H— insisted that as he drank water at Wayne and other places, it was probable that his attack was not due to local causes. At each of these places I was not able to find any special ground for the attack. While here I heard so much of cases at South Media, that I extended my examination up that far, and found two cases in the dwelling of Mr. S—, and one in that of Mr. G— opposite. Nearly all of the infected houses got their supply of drinking water from Media, and those that used their own well had no evidence of contamination from any source. The whole locality has cesswells uncemented (save Mr. S—, who has been extremely careful in all his hygienic efforts), sewage running over the ground, in short the atmospheric condition is such that an explosion of any disease may be regarded as imminent. The milk supply is nearly always from their own cows. I found all the small creeks or runs were receiving more or less foul matters in every direction.

My attention was again called by a number to the continuation of the very foul odors given forth by the flow from the premises of Mr. F—— opposite the blacksmith shop on the Providence road, to which I called attention in my former report. While this flow is claimed to be only wash and bath water, there is some means by which it must contain some matter of a more deleterious nature. This goes down into the stream which passes the houses of W—— and H——, and is regarded by many as a possible source of evil.

I was informed that thus far there had been within a year say twelve cases and five deaths of typhoid fever.

In all my communications with the people I have urged the great importance of care as to hygiene, and I may say that I found them ready, indeed anxious, to co-operate in every way.

One physician of long experience appeared to think the disease indigenous to the place and not eradicable.

As there are a number of physicians who have charge of these cases, would it not be well to open correspondence with them and endeavor to learn exactly the gravity of the present cases, perhaps their ideas as to the cause?

Drs. D. T. Laine, Media, J. H. Fronfield, Media, Mary V. Mitchell, Media, were those mentioned to me as at present in attendance.

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Third Inspection at Wallingford, Delaware County, by Wm. B. Atkinson, M. D., Medical Inspector

PHILADELPHIA, *September 28, 1891.*

Subject of Complaint—Drainage and Sewage.

I went over the ground again very thoroughly, and am satisfied that quite an amount of cesspool sewage flows from the pipe into the grounds of Mr. P——, thence into his pond used by his cows for drinking.

A thorough inspection of the premises of Mr. P—— showed no drainage of any kind into any stream or over the surface of the soil. Everything had been put into the best order, and I found nothing in any part to be objected to.

Inspection of the cesspool drainage of Mr. F——, Sr., showed it to flow into a well from which it was overflowing upon the surface and running in a broad stream down the hill into the stream below. This stream runs into the pond of Mr. P——; I was informed that a man had been employed to pump out this well over the ground but ceased because of the objectionable nature of the work.

I called upon a number of the householders and found few who did not allow the sewage from their cesspools to run into the nearest stream, some conveying it by pipes for a distance in order to reach a stream. Nearly every one with whom I conversed appeared to think this the proper method. Owing to the location of Mr. P——, his stream and



pond received sewage in this way from a large number of houses. For this reason I would suggest that a meeting of the householders and other inhabitants of this place be called and that they be asked to appoint a committee to consider what plan can be adopted to remedy this crying evil.

My own opinion, after a careful consideration, is that the best, in fact, the only means will be to have each house connect its sewer pipes with a well thoroughly cemented, so that no possible seepage can occur into the soil, and these when full to be pumped out by the odorless excavator plan, and the contents conveyed to a distance, there to be made into compost.

I feel sure that if Mr. S—— would have a new well made in the rear of his pig pen, well cemented, and not allow its contents to flow over the soil the whole trouble relative to the drainage from his place would be removed.

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## 22—INSPECTION AT HOWELLVILLE, CHESTER COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, *August 1, 1891.*

Subject of Complaint.—Condition of certain parts of Howellville, Chester county.

Mr. B—— has one or more children very ill with scarlet fever. The house to the east of his property is occupied by Hungarians, etc., and is in a very filthy condition. It had several rooms with bunks or beds and from the appearance each bed held two or more occupants. It was impossible to learn how many people occupied this house at night, but I was assured it was much crowded. Old dirty clothing and rags were lying in every direction both in the rooms and around the house, and on every side were evidences that the inmates made little use of the privies, as dejections from the bowels were seen in the paths, etc. Back of this building were two stone vaults which once were spring houses, now the floors were covered with filthy rags, and I was informed that a man was taken from one recently in a dying condition. The cesspool was located on the hill above and was the ordinary privy, no well, the contents running over the surface of the ground and down in a gutter close by Mr. B——'s house. This house had no cellar, the floor on the ground, and rags and filth of all kinds were strewed around. The next house, Mr. U——, which, while in a clean state, was made very unsanitary by the



odor from this mass of filth. The next was closed, a death from diphtheria had occurred recently in it. The building complained of is owned by S. W——.

Below was an old mill in ruins with a spring house much used to obtain water, but its whole surroundings were extremely doubtful, as human ordure laid all round and the water was not in any way protected.

Another house owned by J. T. D—— and one owned by the railroad were much in need of cleansing, and the privies were objectionable in the same way as the others. In fact one was so filled with mud which ran into the door that no one appeared to use it, but evidently squatted around. In front of this is an old quarry hole in which are dumped old shoes, filthy rags, etc. This is back of the hotel and belongs to the railroad. I saw a number of huts built of hay and branches, dirty and apparently used to sleep in. All the drainage of these places goes into the same little run and down to a creek below.

The whole place needs a most thorough cleaning, *properly constructed privies*, and orderly habits on the part of the workmen engaged on the railroad and the stone works.

Mr. S. W—— promised to have his houses cleaned and assured me he would endeavor to make his tenants do better.

I recommend that he, Mr. J. T. D——, and the railroad be notified of the need of attention at once to these places and if possible the whole should be policed. I feel sure that if the warm weather had continued, a large number of cases of filth disease would have occurred. This may yet happen.

The constable is Mr. Philip Kirk, Chester Valley P. O.; the squire, Wm. Davis, Tredyffrin P. O.

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(b) Instructions to Mr. Philip Kirk, Constable.

*August 10, 1891.*

MR. PHILIP KIRK, Constable, *Chester Valley P. O.*

DEAR SIR: In consequence of the prevalence of scarlet fever at Howellville, the Board caused an inspection of that place to be made. The inspector reports that scarlet fever now exists at the house of Mr. B—— of Howellville. The Board has instructed me to enclose to you an order addressed to Mr. B——, which you are requested to deliver to him, and also to see that attention is paid to it, especially with regard to the house being quarantined.

The railroad company, together with several owners of property are being addressed, with a view of placing Howellville in a better sanitary

condition, as it is feared that an epidemic might break out at any moment.

Very truly yours,

BENJAMIN LEE,  
*Secretary.*

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(c) Notification to Mr. B——.

*August 10, 1891.*

Mr. B ——, *Howellville, Pa.:*

DEAR SIR: The attention of the Board has been called to the insani-  
tary condition of certain houses and other property at Howellville, and  
an inspection of the place has been made by Dr. Wm. B. Atkinson,  
medical inspector of the Board.

I am instructed to inform you that until all danger is past with regard  
to the prevalence of scarlet fever from which one or more of your chil-  
dren are suffering, that your house must be quarantined, and no person be  
allowed to enter or leave such premises, except those who are absolutely  
compelled to do so during this period. When the disease has ceased,  
your house must also be fumigated with sulphur and scrubbed with a  
solution of corrosive sublimate. Full directions for properly carry-  
ing this out will be found in the circular enclosed with this letter. Your  
prompt attention to these instructions will greatly aid in staying the  
progress of the disease.

Very truly yours,

BENJAMIN LEE,  
*Secretary.*

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(d) Notification to Mr. S. W——.

*August 10, 1891.*

Mr. SAMUEL W——, *Howellville, Chester county, Pa.:*

DEAR SIR: With reference to an inquiry into the cause of the pre-  
valence of scarlet fever now existing at Howellville, and the insani-  
tary condition of that place, the medical inspector reports that in a house  
owned by you at Howellville recently occurred a death from diphtheria.  
The house is now reported to be empty. I am directed to request you  
to have this house disinfected by fumigation with sulphur and properly  
cleansed at once, full directions for which will be found in the enclosed  
circular. I am also to ask for your kind co-operation in placing Howell-  
ville in a better sanitary condition, as the Board fears that in its present  
condition a sweeping epidemic might occur at any moment, espe-  
cially during the present hot weather.

Very truly yours,

BENJAMIN LEE.

## (e) Notification to Mr. J. T. D——.

*August 10, 1891.*Mr. J. T. D——, *Howellville, Chester county, Pa.:*

DEAR SIR: In consequence of a complaint that scarlet fever prevailed at Howellville, and that the place was in a very insanitary condition, the medical inspector of the Board has made an inspection. Among other matters requiring immediate attention, he mentions that a house owned by you is much in need of cleansing, and that the privy of same is very objectionable. I am therefore instructed to request you to have this house and premises put in good sanitary condition at once. The Board further direct me to ask for your co-operation in having Howellville placed in a better sanitary condition, as it is feared that an epidemic might occur at any moment, especially during the prevailing hot weather.

Very truly yours,

BENJAMIN LEE,  
*Secretary.*

## (f) Letter to the Secretary of Pennsylvania Railroad.

*August 16, 1891.**The Secretary, Pennsylvania Railroad Company, 233 South Fourth street, Philadelphia:*

DEAR SIR: The attention of the State Board of Health has been called by the police surgeon department of Philadelphia, to the insanitary condition of Howellville, Chester county, and an inspection of the district has been made. The medical inspector reports many serious nuisances, and states that an epidemic may occur at any moment, so bad are the conditions at present existing. Among other nuisances, he mentions a house owned by your company as being much in need of cleansing, the privy being full to overflowing, and human excreta lying all around, the privy being too full to be used. Many Hungarian laborers occupy cottages at this place, their habits being disgustingly filthy.

I beg respectfully to suggest that your company co-operate with Mr. J. T. D—— (the owner of the quarry works at Howellville), the squire, Mr. Wm. Davis, Tredyffrin P. O., and the constable, Mr. Philip Kirk, of Chester Valley P. O., as a sanitary committee, and endeavor to have the place put in better sanitary condition. The Hungarian and other laborers should have privies provided for their use, and should be compelled to use them. Every privy should also be emptied regularly every week.

The present warm weather is all in favor of an epidemic. Already one fatal case of diphtheria has occurred, and two or more cases of scarlet fever at present exist in the house of a Mr. Beidler. Your early attention to this matter will oblige,

Yours very truly,

BENJAMIN LEE,  
*Secretary.*

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### 23—INSPECTION AT ROCHESTER MILLS, INDIANA COUNTY.

By W. E. MATTHEWS, M. D., *Medical Inspector.*

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INDIANA, PA., *August 20, 1891.*

I visited Rochester Mills on the 19th and 20th of August, 1891. The postoffice of Rochester Mills is in the town of Richmond, Grant township, Indiana county. The town lies in a low marshy place, the creek, Little Mahoning, passing through it from the northeast to the southwest, and hills surround the town on every side. The sub-soil is very porous with rocks at a very slight depth. The water supply is almost entirely from wells. Some few of these are drilled to the depth of thirty or forty feet, and encased to the rock. Most, however, are dry wells, walled with stone. The first case of fever in the town developed one year ago, or in July, 1890, just above the spring. The land sloped toward the spring, and the water closet is located only a few rods above it. The stools from this patient could very readily drain into the spring. The water gets quite low in the summer time, and a tub is sunk in the ground just below the spring, and water is taken from this tub.

The next persons to take sick were a Miss R—— and Mrs. W——, a short time after, and both, from the history, had evidently drank water from this spring. These cases were in the fall of 1890. Mr. W—— sickened after his wife had recovered, and died. It is very probable that the stools, part of them at least, were thrown out upon the ground where they could reach the drain. The cases at present are below the road, with but one exception, and that family gets its water supply from below the road. These cases have all developed within the last eighteen or twenty days. About four weeks ago there was a very heavy rain which overflowed all the ditches and these lots below the road. All the cases have developed since this occurrence.

As an evidence of the porous nature of the soil and how easily the wells below the road can be contaminated, some time ago manure was spread upon the fields above the road, and shortly afterwards the water from one of the wells below the road could not be used. The drainage from the manure could be tasted in the water. There are several cases



of fever in the surrounding country, but I think all these cases could be traced to this water supply, as the people attend church in the town and have evidently drank from these wells.

As the people are not in a position to help themselves to any great extent, the only remedy I have to suggest is that a well be dug above the town, and water be taken from it. I think the water should be analyzed. Vessels for the collection of water should be sent to M. T. Work, Rochester Mills, Indiana, Pa. I should also state that the first case in the Scheesely house just above the spring, was contracted away from the town. It was genuine typhoid fever. There have been altogether about twenty or twenty-five cases, with five deaths, and at present in this little town (population about 130) there are nine cases.

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#### 24—INSPECTION OF CAMP SHERMAN, NEAR DEVON, CHESTER COUNTY.

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By WM. B. ATKINSON, M. D., *Medical Inspector*.

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PHILADELPHIA, *August 24, 1891.*

Subject of complaint—Unsanitary condition in which the ground was left after the military had withdrawn.

The secretary, Dr. Benj. Lee, in company with Medical Inspector Wm. B. Atkinson, made a careful inspection of the entire grounds, and found that the garbage pits and cesspools had been quite well covered with fresh earth, and that no evidence existed of any want of care in this particular. But there yet remained a large amount of pieces of old paper and other *débris* which should have been gathered and burned in order to give the place a cleanly appearance.

After the inspection had been completed, it was accidentally discovered that the complaint was well founded at the time it was made, but that Mr. Paist, manager of the Devon property, a few days prior to this inspection, had a force at work who had filled up the latrines and garbage pits with fresh earth, so that the nuisance was abated. The inspectors suggested to Mr. P. that the *débris*, paper, etc., be collected and that the ground generally be put in a more cleanly condition.



## 25—INSPECTION OF DRAINAGE SYSTEM AT WAYNE, DELAWARE COUNTY.

By W. B. ATKINSON, M. D., *Medical Inspector.*

PHILADELPHIA, August 14, 1891.

Inspections of the new system for the sewerage of Wayne.

August 8th, at the request of Mr. Frank Smith, Medical Inspector W. B. Atkinson met Col. Waring and others at Wayne and went over the ground of the new plant. The whole amount of sewage flows by iron pipes into a reservoir, where, by means of a powerful engine, it is aerated, the sewage being thrown in a small stream again into the reservoir, by which process it is claimed that a large amount of air is carried into the entire quantity, and then the sewage is forced by two duplex engines up the hill through a pipe to a well whence it is allowed to flow over the surface of the soil, distributed as evenly as possible, being retarded by barriers of earth and stone so that the soil may have full opportunity to eliminate all material which is appropriate to enrich the earth. This process is continued to each section of the ground, alternating so that each section may have time to obtain the fertilizing matter in turn. It is claimed that before the fluid can reach the low ground so as to approach the creek that it will be clarified and purified, so that should it reach the creek it can do no harm. At this inspection the flow had not, of course, been regulated so as to flow evenly.

August 14th, Secretary Lee and Medical Inspector Atkinson inspected the plant and met Col. Waring, who went over the ground with them. The flow was much more evenly distributed and all appeared to be working in a satisfactory manner. It is claimed that nothing can now flow into the Itham creek, and so the whole difficulty relative to the pollution of the stream is avoided. The test must be made by an examination of water obtained at the lowest point and should any be found to flow into the creek that must be tested. The inspectors were informed that arrangements are to be made to prevent the flow of rain water into the reservoir, which will materially lessen the amount of sewage to be cared for.

## 26 INSPECTION AT SCHUYLKILL HAVEN, SCHUYLKILL COUNTY.

By W. MURRAY WEIDMAN, M. D., *Medical Inspector.*

September, 7, 1891.

In company with Mr. Goas, secretary of the board of health of Schuylkill Haven, I inspected the "lots in southern portion of the place" belonging to Loose estate, S. R——, J. G—— and Mrs. B——, facing on Columbia street, running back 210 feet to an alley.

West of these properties and almost at right angles, Main street is continued on the banks of the Schuylkill river.

Some few years ago the streets were raised by authority of the town council. Consequently these properties are about two feet below the level. On the northern side of the alley there is an open gutter except where it crosses Main street, where there is a culvert twenty inches square, of stone.

Two weeks ago, the river, after a heavy rain, backed its water through the culvert and covered these lots, so that to-day those of L—— estate and Mrs. B—— are covered with stagnant water to at least three-fourths, Mr G——'s one-half and R——'s one-fourth, discolored (black) by the large deposits of coal dirt in the neighborhood.

Some of the owners are ready and willing to abate the nuisance, others think the town authorities are the proper persons, and the owner of one does not reside in the town.

Some one, a plumber, was willing to abate it by means of a siphon for \$25.00. By ditching I thought it could be done more thoroughly and economically.

I recommended that the board of health established by ordinance in 1874, and their physician should inspect the same, and as soon as he declares it a nuisance, the board should notify the owners of all the submerged properties of this part, that they (the owners) must abate the same within —— days. Neglecting or refusing to act, they should employ some one to do the work and place a lien on each property.

If they have ever adopted and proclaimed or published "rules, orders and regulations," there will be no trouble or delay. As I could find none, I told them to act under the direction of their attorney, and trust soon to hear that the nuisance has been abated, to assemble their body immediately and pass rules and regulations, and post them in conspicuous places.

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(a) Supplementary Report.

*September 7, 1891.*

During my visit to Schuylkill Haven last Saturday, the following conditions were called to my attention:

A well on Dock and another on Main street have been abandoned, pipes so laid that the refuse from kitchen and house can be emptied into the well. Although not so used by present occupants, their location is such that they would, when made receptacles of house *débris* contaminate the wells on adjoining properties which are used daily. I could only recommend vigilance, and when suspicion was aroused, have water analyzed.

My attention was also called to the condition of the bed of the river and of a meadow just outside of the borough limits, now overflowed,

through which Long run comes. Quantities of coal dirt have accumulated in the bed of the river, and in such quantities about the mouth of Long run, that its channel has been changed, which during the heavy rain, a few weeks ago, checked the egress of the water and caused the meadow to overflow. Since the abandonment of the canal no effort has been made to keep the bed of the river clear and free, and hence a question of law has arisen as to whose duty it is, viz: The borough, the private operator or corporation controlling the coal product.

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(b) Letter of the Secretary to Mr. C. H. Goas.

September 9, 1891.

MR. CHARLES H. GOAS, *Secretary Board of Health, Schuylkill Haven, Pennsylvania:*

DEAR SIR: Dr. W. Murray Weidman, medical inspector, who has recently investigated the condition existing in your borough, agrees with you that they seriously threaten the health of your community. I entirely support his recommendations, that your board, if it has not done so, shall at once adopt such rules, orders and regulations as may be necessary to cover all such nuisances, or others, injurious to the public health, and publish the same in the newspaper having the widest circulation in your town. If you have already done so, there need be no delay in declaring the condition of the submerged properties a nuisance, and ordering the owners thereof to abate the same within ten days, and in case of their neglect or refusal to obey your order, in proceeding to have the work thoroughly done, and a lien placed on such property to cover the expense. In order to assist you in the formulation of rules, I send you copies of our model ordinance and model rules for the organization of a board of health. If you can persuade your council to adopt the ordinance in full, with such slight modifications as local conditions may demand, you will have a firmer basis of action than if you simply adopted the form of regulation of your own body. I observe, however, that the ordinance of April 29, 1874, establishing your board is a very strong one, requiring borough officers to carry out your rules, orders or regulations under a penalty of heavy fine. In either case, therefore, your authority is ample, and you need not hesitate a moment in taking action of the most positive and authoritative nature. I will request you to give me a full report of all proceedings taken in regard to this matter, whether by council or by your board. Heartily sympathizing with you in your expressed anxiety that your borough should present the best possible sanitary state, I am,

Yours respectfully,

BENJAMIN LEE,  
*Secretary.*

(e) From C. H. Goas, to the Secretary.

SCHUYLKILL HAVEN, *September 18, 1891.*

BENJAMIN LEE, M. D., *Secretary State Board of Health :*

DEAR SIR: Enclosed will find one of notices served on property owners. We had no trouble with the people, they used lime and had it spread over all of the lots. Our physician, Dr. Lenker, was satisfied with it as a disinfectant and deodorant. We had Superintendent Smith here to view the Schuylkill river and canal which is filled with coal dirt, washed in from coal regions of Philadelphia and Reading Railroad Company mines, which causes river to overflow, and think he, as superintendent of navigation, will have it removed. Thanking you very kindly for the interest you have taken in this matter,

I am truly yours,

C. H. GOAS,  
*Secretary Board of Health.*

#### NOTICE TO ABATE.

You are hereby notified that the decaying vegetable matter and the stagnant water on your lot on Columbia street, is dangerous to the public health, and that the same must be removed or thoroughly disinfected within five days from this date, or the borough will proceed to remove the same and will lay a lien upon your property for the cost of removing it, together with twenty per cent. added thereto as provided by act of assembly in such case made and provided. If the water is not removed but is claimed to be disinfected, it must be disinfected in a manner satisfactory to the physician of the board of health.

By order of the board of health.

*September 11, 1891.*

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#### 27—INSPECTION OF TYRONE, BLAIR COUNTY.

By GEORGE G. GROFF, M. D., *Member of the Board.*

LEWISBURG, *September 4, 1891.*

In accordance with the request of the burgess of Tyrone, I visited that place on September 3d and made an inspection and gave him advice in reference to the management of a threatened outbreak of diphtheria.

There is nothing in the situation or present condition of Tyrone to make it more liable to an epidemic of this disease than any other town in the state. It is in a fair sanitary condition. The disease has been



recognized some ten days. There are reported to date twenty or twenty-four cases with four or five deaths. The disease appearing largely to be confined to families using well water, the use of such water, it was recommended, be abandoned.

I distributed the circulars on "Contagious Diseases," "Diphtheria" and "To Funeral Directors," and urged upon the burgess that he secure the cooperation of the physicians, undertakers, ministers and school authorities to restrict the disease to its present limits. Public funerals and visits in families where members are sick of diphtheria not to be tolerated. Children exposed to infection to be rigidly excluded from public and sabbath schools until danger is past. Disinfection, isolation of sick, etc., all to be governed by the directions of circulars of the Board.

There is a great demand for our circulars, and I would urge that ten full sets be sent for use of burgess and town council, ten sets for physicians, eight sets for ministers. A liberal supply of circulars on diphtheria. Population about 6,000. I think the burgess would put one of the diphtheria circulars in every house if they were sent him, as he seems anxious to do all in his power to stop the threatened epidemic. I recommend that this be tried.

I saw members of town council, members of school board, physicians and all seemed anxious to know what was the best to do to cut the epidemic short.

I think if the circulars are accompanied by a letter from the secretary of the Board, addressed to physicians, undertakers, ministers and school authorities that all will respond with alacrity.

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(b) Proclamation.

*To the Citizens of the Borough of Tyrone :*

It has been reported to us that there are a number of cases of diphtheria of a malignant type in our community. While we do not think there is any occasion for general alarm we deem it advisable to take the necessary precautionary steps to prevent the spread of the disease and avoid a possible epidemic. To this end we call upon the citizens of the borough and suburban places to begin at once a general cleaning up of their premises. All decaying vegetation, garbage, and filth of every description should be cleaned up and burned. If each householder will do his or her duty in this matter the disease can be confined to narrow limits and the health of the people preserved. The following regulations have been adopted by the sanitary committee of the borough and their strict observance is enjoined upon the people:

*First.* There shall be no public or church funeral of any person who has died of diphtheria, nor of any person who has died of any other disease in a house in which diphtheria was present at the time of such death.



*Second.* The body of any person who has died of diphtheria shall not be exposed to view. Such body shall be immediately after death, wrapped in a sheet which has been soaked in a solution of corrosive sublimate, in the proportion of two drachms to the gallon of water, and privately buried within twenty-four hours.

*Third.* No person shall unnecessarily visit any house in which diphtheria is known to exist, or has existed within a period of six weeks.

*Fourth.* No member of a family in whose house diphtheria exists should attend school, Sunday school, church, theatre or any other public assembly.

*Fifth.* Every school, among members of which there have been cases of diphtheria should be closed, and no child should be received into a non-infected school who has been attending one among the pupils of which the infection is known to have existed.

*Sixth.* No persons recently recovered from an attack of diphtheria, or in whose family diphtheria exists, shall go to work in any factory or mill in which their work requires them to be in close contact with fellow workmen in confined rooms, without a certificate from their attending physician, stating that in his opinion they run no risk of conveying the contagion.

*Seventh.* The period during which a person who had diphtheria is in danger of conveying the contagion is from four to six weeks.

*Eighth.* All rooms and houses in which diphtheria has occurred, and all clothing, bed clothing and articles of furniture which have been exposed to infection should be disinfected in accordance with the sub-joined instructions.

*Ninth.* No dead animal, garbage, or filth of any kind shall be thrown into any stream, race, dam, pond or other water, or upon any public road or place. All such material should be either burned or buried.

*Tenth.* All cellars should be thoroughly cleaned and whitewashed, and all house yards and privies disinfected with copperas and kept clean.

RICHARD BEASTON,

*Burgess.*

D. H. HAAGEN,

JAMES WIGHAMAN,

JAS. A. CRAWFORD,

JOHN OAKWOOD,

*Sanitary Committee.*

- (c) Circular Letter to the Clergy, Physicians, School Authorities, and Funeral Directors, by Benjamin Lee, M. D., Secretary.

*September 9, 1891.*

*To the Reverend Clergy, the Physicians, the School Authorities, and the Funeral Directors of the borough of Tyrone, Blair county, Pa.:*

The State Board of Health of Pennsylvania is desirous to do everything in its power to cut short the epidemic of diphtheria now prevailing in your town. To this end its late president has visited your place—made a careful inspection, and personally advised your authorities as to the proper step to be taken.

The Board, through its secretary and executive officer, has communicated with your chief burgess, endorsing the recommendations of Dr. Groff in all respects. It has reason to believe that that officer will use his best efforts to carry out the instructions which he has received. A heavy responsibility, however, rests upon the members of each of your several vocations in regard to this matter. By a cheerful compliance with his orders you may do much for the saving of life and the prevention of disease. Your advice will be of the greatest assistance in supplementing his instructions in individual cases; on the other hand, interference or opposition on your part may succeed in thwarting his best efforts. The Board, therefore, urges that you will unite in procuring compliance with the following instructions:

First, that the use of well water for drinking purposes be abandoned, whenever possible.

Second, that such water if used, be always previously boiled.

Third, no public funeral, either in church or at the house, be allowed to take place.

Fourth, that every house in which the disease exists be placarded, so that persons may not enter it in ignorance of the presence of the infection.

Fifth, that all visiting to or from such houses be discouraged.

Sixth, that the inmates of such houses, whether children or adults, be not permitted to attend any public assemblage.

All precautions with regard to cleanliness of houses, yards and streets, admirable as they are, will be comparatively useless so long as intercourse is allowed between the sick and the well beyond what is absolutely essential for the care and comfort of the sufferers.

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- (d) Letter to the Chief Burgess of Tyrone, by the Secretary.

*September 9, 1891.*

HON. RICHARD BEASTON, *Chief Burgess, Tyrone, Pa.:*

DEAR SIR: In accordance with a request of Dr. Groff of our Board, I have sent you circulars with regard to the prevention of the spread of

diphtheria and other contagious diseases. To-day I forward you a sufficient number for free distribution and will send more if you will let me know you can use them. Dr. Groff reports favorably of the measures which you have ordered to be taken in putting the town in good sanitary condition. These efforts, however, will be unavailing, so long as free intercourse is allowed between the well and the sick, between infected houses and those in which the disease has not occurred. Unless the disease has already to a great extent abated, I would strongly urge you to issue a proclamation forbidding under penalty, first, public funerals of those who have died of diphtheria; second, unnecessary visiting at houses in which the disease exists; third, visiting from such houses to others; fourth, the attendance of the inmates of such houses, whether adults or children, at public gatherings of any kind for purposes of worship, education or amusement. I urgently advise the placarding of every house in which a case of the disease exists until such house has been disinfected in accordance with the instructions contained in the circular of the Board.

I enclose a letter addressed to the clergy, the physicians, school authorities and funeral directors, which it would be well for you to have published in your most widely-circulated paper.

I have the honor to be,

Yours respectfully,

BENJAMIN LEE.

*Secretary.*

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(e) To R. Beaston, Chief Burgess, by the Secretary.

*Sept. 17, 1891.*

MR. RICHARD BEASTON, *Chief Burgess, Tyrone, Pa. :*

DEAR SIR: I take pleasure in acknowledging the receipt of your very satisfactory statement with regard to the efforts being made by yourself, the borough council, school authorities and citizens generally to stamp out the diphtheritic infection in Tyrone. Your proclamation is admirable, and I have no doubt has been the means of saving many lives. I trust you will not abate one jot of your precautions as long as a single case of the disease exists within the limits of your borough,

Yours respectfully,

BENJAMIN LEE,

*Secretary.*

(f) To the Same.

September 29.

MR. RICHARD BEASTON, *Chief Burgess, Tyrone, Pa.:*

DEAR SIR: Your three communications, the third containing the ordinance of your borough with regard to the reporting of contagious diseases by physicians, are received. I am extremely glad to hear that you are taking prompt steps to enforce it by the arrest of those who neglect it. I have no doubt whatever that this step will bring them to their senses. Your powers are ample, and even those who have refused to obey you in the past will respect you all the more if you are firm.

I would suggest in regard to section two of your ordinance that it is scarcely fair to saddle the duty of placarding an infected house on the physician. This should be done by the order of the board of health, health officer, sanitary committee or burgess, as the case may be. Please let me know if you require any further advice.

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(g) Ordinance No. 6.

SECTION 1. All physicians residing within the borough of Tyrone, or practicing in said borough, who shall have under his, her or their care and direction any case of small-pox, or other contagious or infectious disease, shall report the same in writing to the burgess, stating the disease, name of the afflicted, residence, etc., immediately after the same shall come to his, or her, or their knowledge.

SEC. 2. And it shall be the further duty of any physician as aforesaid, having in charge any case of small-pox or other contagious disease, to fix or cause to be fixed on the front door of any house or building in which a case of small-pox is confined, a card not less than 8x10 inches, with the words "Small-pox" either painted, written, or printed thereon, in plain letters.

SEC. 3. That any person or persons within the limits of the borough aforesaid, who may be afflicted with any contagious or infectious disease, shall be required to confine themselves during said affliction, closely and strictly within their respective dwellings, until such time as they can produce a certificate from some regular physician, certifying that the person so afflicted has so far recovered from the disease as to go abroad, without endangering the health of the community.

SEC. 4. That no parents or heads of families, where the small-pox or any other contagious disease prevails, shall permit their children, or persons under their care, to attend any school, or permit any person as aforesaid to go out from their premises during said affliction, except in cases of extreme necessity, under a penalty of not less than ten (10) dollars to be collected as hereafter provided.

J. M. CALDERWOOD, *Burgess.*W. GEO. WARING, *Secretary.*



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*To the Burgess of Tyrone Borough :*

In compliance with the requirements of the State Board of Health and with Borough Ordinance No. 6, I herewith make report of the following or infectious disease under my care and direction ;

Name of afflicted . . . . .  
 Disease . . . . .  
 Name of family with whom living . . . . .  
 Residence . . . . .

[Physicians are required to make this report to the burgess immediately after it shall come to his, her or their knowledge that any one under their care or direction is afflicted with any contagious or infectious disease.]

## 28. INSPECTION AT WASHINGTON, WASHINGTON COUNTY.

By J. R. THOMPSON, M. D., *Medical Inspector.*

PITTSBURGH, *September 18, 1891.*

My investigation at Washington, Washington county, developed the following facts: Barnett & Finn, attorneys, the *Journal* Publishing Company, and others whom I met, are much in favor of creating a local board of health in their town, and I urged the necessity of it as a protective measure. I gave Mr. Barnett a copy of the rules governing local boards of health. The town is well sewered and has its own water works, but few of the people have taken the water into their houses, about three-fourths of them still use well water, and this must be contaminated by the number of cesspools in the town. There was no special complaint made. Mr. Barnett mentioned a cesspool at Dr. R——'s drug store, which was found to be communicating with a spring at B. & O. depot. The spring has since been closed up with the result that the liquid contents of the cesspool, together with the spring water, have come to the surface on Main street. There are nine (9) cases of typhoid fever in West Washington at present. The burgess of the town is Samuel Hazlett.

## 29.—INSPECTION AT BUTLER, BUTLER COUNTY.

By J. R. THOMPSON, M. D., *Medical Inspector.*

PITTSBURGH, *September 22, 1891.*

The inspection at Butler, Pa., revealed the following conditions: Water-works in the main portion of town not adequate to supply water to south-side (across the creek). Auxiliary water works being built on that side of the town not yet completed. Most of the cases of typhoid fever are on the



south side of town; the disease results from drinking water from wells. Sewers are being extended to that part of town as rapidly as possible. I recommended the erection of a small garbage furnace to consume the garbage of the town. It is estimated that there are about seventy or eighty cases of the fever in the town. Dr. B—— had twenty-two cases occur in three families. Clearly traceable to a contaminated well. The burgess of the place is J. Q. A. Kennedy.

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(b) Letter—Burgess Kennedy from the Secretary.

September 29, 1891.

Mr. J. Q. A. KENNEDY, *Chief Burgess of Butler, Pa. :*

DEAR SIR: The inspection made at your town by Medical Inspector Thompson of the Allegheny district, leaves little room to doubt that the epidemic of typhoid fever, from which you are at present suffering, is due to the use of water from polluted wells. I cannot too strongly urge upon you the duty of using the absolute power vested in your council by law, to close up every well in regard to which there is the slightest apparent connection between the use of its water and the occurrence of sickness. I forward to you, as well as to Mr Thomas Alexander, the necessary documents for the organization of a local board of health, and although there is no legal provision for such a step, I think your council would be wise in assuming the responsibility at this juncture.

I have the honor to be,

Yours, respectfully,

BENJ. LEE,  
*Secretary.*

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(c) Letter to Thomas Alexander from the Secretary.

September 29, 1891.

Mr. THOMAS ALEXANDER, *Zeigler avenue, Butler Pa. :*

DEAR SIR: At the suggestion of Dr. J. R. Thompson, medical inspector of the Allegheny district, who recently by my order visited your town and investigated its sanitary conditions, I send you the documents necessary for the organization of a local board of health. Understand, however, that the legislature has not yet authorized the establishment of boards of health in boroughs, and that, therefore, you will need to get your council to pass a strong ordinance, and to be assured that it will back you up in your praiseworthy efforts to protect the health of your people. The model ordinance, which I enclose, would cover the ground very completely. It is evident from Inspector Thompson's report that your present epidemic results principally from the use of well water. Your first step, therefore, must be to order the immediate disuse and closure of every well which has any symptoms connected with a case of fever

It would pay your town to furnish drinking water from your water works to those people who are compelled to abandon their wells and who have not the reservoir water within easy reach.

Trusting that your efforts to procure a permanent sanitary organization will be successful, I am,

Yours very truly,

BENJAMIN LEE,  
*Secretary.*

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### 30.—INSPECTION AT LENNI, DELAWARE COUNTY.

By WM. B. ATKINSON, M. D., *Medical Inspector.*

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PHILADELPHIA, *September 21, 1891.*

Subject of Complaint—Prevalence of diphtheria and typhoid fever pond near the Baltimore Central railroad.

I found upon inquiry of Dr. M. P. Dickinson and Dr. Lashelle, who practice and live in this village, that very few cases of either disease at present exist. The latter had none of either, and the former only two of typhoid, one being at Llewellyn, imported from Chester, the other at Glen Riddle, regarded as the result of exposure, and the old unsanitary condition of that locality. I was assured these were all that were known to exist. Dr. D. informed me that there were some eighteen to twenty cases of malarial fever in the neighborhood.

Diphtheria was present in a few instances, but these are due to the old state of affairs in connection with the Chester creek as reported in the inspection of nearly one year ago. Nothing has been done by people at Riddle's Mills to relieve the conditions then existing. The pond is due to the damming across by the railroad, has been in existence more than twenty years, and does not appear to be the cause of any sickness. It is some 300 or 400 feet in length, and 100 feet in width, the stream doubling around an island, the water having two outlets, and is supplied from a spring to the north. It is five feet at its deepest, and shows no sign of stagnation or appears in any other way objectionable. I visited the school house, saw one of the directors and the teachers, and all agreed that they had no complaint to make. I find no need of any action in the premises, but would urge that if possible the proprietors of the Riddle Mills be compelled to put in sanitary condition their property. My former report will give in detail all the needed reforms.

## 31—INSPECTION OF FOREST CITY, FOREST COUNTY.

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By L. H. TAYLOR, M. D., *Medical Inspector.*

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WILKES-BARRE, PA., *October 6, 1891,*

I to-day visited the borough of Forest City to investigate its sanitary condition with reference to typhoid fever, etc. Forest City is a town of recent growth, having increased in ten years from less than one hundred to nearly three thousand inhabitants. It is situated in the extreme southeastern corner of Susquehanna county, on the right bank of the Lackawanna river, about six miles above the city of Carbondale.

It is situated on a side hill and consists of a series of streets running north and south parallel with the river, rising one above another as we proceed toward the west. This situation is an admirable one for street drainage, or would be if the gutters were properly paved, but a very unfortunate one for the residents who reside on a lower level than their more fortunate neighbors. The sewage from privy vaults and house drains in hundreds of instances runs down through the yards and close to the houses of the neighbors below.

There is no system of sewers in the town, but drainage from privy vaults and houses is into the open gutters of the streets, and oftentimes directly through private property, and owing to lack of grading and paving of gutters, this accumulation remains in various localities, producing a horrid stench offensive to the inhabitants and prejudicial to public health. Numerous privy vaults are full to overflowing. Nuisances are abundant everywhere. As I understand from citizens no successful attempt has been made by council in any way to abate these nuisances.

Some of the property owners have prepared suitable vaults which are kept in such condition as to be no cause for complaint.

As to the existence of typhoid fever, I am informed that there have been from fifteen to twenty cases in all during the past two months.

The first case occurred on Main street in a locality where typhoid has been prevalent for several years. This patient died, and his wife is now sick with the fever. Well water was used, and the same well has been used by numerous typhoid cases of the past.

The most of the cases, however, are in a comparatively narrow strip running across the town on either side of Centre street.

Beginning at the top of the hill at a house between Susquehanna and Lackawanna avenues, there are two cases, with two other cases in an adjoining house.

The privy here is situated above the well, about thirty feet from it. It is used by seventeen people, and the well by the same number. The water now used is boiled, following the advice of the physicians. Following down the hill from west to east in line of Centre street the wells

and privies are so arranged that contamination of each well can scarcely be avoided. Nearly all of these cases are in this narrow strip, and all of them are users of well water.

It is the old story so often repeated and so little heeded. In the majority of these cases the wells are so placed as if especially arranged to receive drainings and leachings from cesspools.

The town is partially supplied by water pumped from the Lackawanna river; a portion of which is sent directly into the mains; a portion forced into a reservoir a half or three-quarters of a mile away, whence it flows to supply a part of the town. This supply from the Lackawanna river is by no means an ideal one, but in my judgment is much to be preferred to the well water in use. The objection to the city supply is that the river itself is a small stream, with a small settlement of four or five families one-and-a-half miles above the pumping station, and a larger town (Carbondale) some six miles above, and the town of Herrick one mile further. These places have no sewers running into the river, but all surface drainage must find its way thither and be a possible source of contamination. A purer supply could probably be found a few hundred yards above the pumping station, in Brace Brook, but I am not prepared to say that it would be sufficient for the town.

If the dam at the station were cleaned and the charcoal filter around the intake renewed occasionally, the present supply would be reasonably safe for some time to come. Mr. L. H. May is superintendent.

I did not have an opportunity of seeing him to ascertain the exact number of houses supplied with hydrant water, though I heard it estimated by others that about half of the town is thus supplied.

The great need of the borough is a system of sewers, and this should earnestly be urged upon them, but as it is impossible to secure this desideratum at once, the borough council should be urged in strong terms to abate the nuisances that exist in the form of overflowing cesspools. By digging suitable vaults and emptying the same as often as they become filled, a large part of the ground for complaint would be removed. The burgess should be requested to issue a proclamation declaring all wells in the infected districts as absolutely unsafe, and all wells in the city as liable to be dangerous, and recommending that all well water should be boiled before being used for drinking or culinary purposes.

At the urgent request of a number of citizens I remained until evening to attend a meeting of the town council, at which meeting I gave the members the substance of my recommendation, and assured them in plain terms that their duty lay in the line of abating these nuisances.

There now seems to be a disposition on the part of the council to proceed to sewer the town; any encouragement that you can give them in this line will be timely and will help strengthen the resolutions already formed. I urged them also to look forward in the near future to secur-



ing a better water supply. The inspection has already resulted in good, for the removal of one of the most glaring of the nuisances will be commenced to-morrow, the owner of the property at fault having promised in my presence to join his neighbors at once in putting in a private sewer.

The president of the town council is Mr. Thomas Brown, the burgess is Mr. Benjamin Maxey.

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### 32—INSPECTION AT SHANKSVILLE, SOMERSET COUNTY.

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By J. S. HACKNEY, M. D., *Medical Inspector.*

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SOMERSET, PA., *October 8, 1891.*

I visited Shanksville, Somerset county, this day. I was very materially assisted in my investigations by Dr. J. W. Carothers, a prominent physician of Somerset, Pa.

Shanksville is an unincorporated village of about 250 inhabitants, situated about ten miles from Somerset. The country about is principally farming land, and is of a loose, sandy nature.

The local physician of this place is Dr. W. L. Krissinger, who accompanied Dr. Carothers and myself in our investigations. He reported to us that there had been from twelve to fifteen cases of typhoid fever in and about the village, and that this had been the third year that the disease had broken out. He reported no deaths from the disease. I requested to be shown some of his cases, and herewith subjoin my report of those I saw:

At the house of John B——— two cases; Mrs. B———, aged 51; has been sick six weeks; is now very weak; began with pains in head and back; high fever; but slight diarrhoea at first; no tympanites; patient had been in the west until two weeks previous to her illness; patient now convalescing.

George B———, son of Mrs. B———; had typhoid fever two years ago, immediately after the Johnstown flood, where he had been working; has now been sick two weeks; has no diarrhoea; no tympanites; no rose-colored spots; no bleeding of the nose and but slight fever.

Inspection of the premises found them in a fairly good condition.

At the house of E. B———, two cases—E. B———, aged 54, sick six weeks with about the same symptoms as the above two cases, as was also his daughter, aged 13, who had been sick four weeks and was now convalescing.

Inspection of the premises showed a bad state of affairs, cellar damp and unaired; well at the corner of the house where they emptied all their slops, which percolated back into the well. The privy, pig-pen



and stable also were situated in such a way as to afford an easy drainage into their water supply. In fact the whole town is so situated that the stables, privies, etc., have a natural and easy drainage towards the dwelling houses and water supplies, and notably so is the hotel, kept by J. H. ——— where everything from the stable, privy, pig-pen and hen-house drains into the kitchen door. At this place they are conveying their water from a spring through tile pipes underneath their stable and pig-pen to their house. I recommend that they convey their water through iron pipes, tightly screwed together. I further recommend a thorough cleaning of the town in regard to surface drainage. I also visited a butter factory but could not get inside. On the outside there was complete lack of drainage; sour buttermilk was allowed to stand in pools around the building; also their pig-pen was in a foul condition and needed a thorough renovating.

My diagnosis of the trouble is a low form of malaria and not typhoid fever, which can be prevented only by a thorough cleansing of the town.

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### 33—INSPECTION OF DAM, LEBANON COUNTY.

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By W. MURRAY WEIDMAN, M. D., *Medical Inspector.*

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READING, PA., *October 14, 1891.*

On October 12 I visited the dam, building in Lebanon county, seven miles south of the city, to investigate the sanitary condition of the banks of the stream or streams furnishing the water supply of the city.

The daily number of men employed during the summer in the construction of the dam (about 400 feet long), was eighty-three; at present fifty-two are thus employed, mostly residents of the vicinity. The work is expected to be complete in five weeks. Whose is the responsibility for the selection of the site of the shanties, stable, hut, pig-pen, sink, etc., on the eastern slope of the hill, and thirty to fifty feet upward from the stream I do not know; a better might have been chosen, then no fears of possible or probable contamination could have arisen. They are too near the stream forming part of the water supply. The only evidence of untidiness or carelessness I saw was the contents of a chaff bag which had been emptied near the buildings. The common, north of the highway, along a whitewashed board fence, had been used as a depository of human excrement instead of the sink selected by the contractors.

There had been some diarrhœa among the laborers during the summer; even now a few cases had been sent to the hospital with typhoid

symptoms (see report from hospital and Dr. Keith, of Schæfferstown, attending physician at the works). An interview with a family (Matthews) living on the western bank of the stream, showed that diarrhoea and sore throat had occurred in that family as well as that of the family (Hoffman) just above them, some just convalescing from the latter disease, but neither could attribute it to the water supply supposed to be polluted or contaminated, as they had not used the water from the stream.

The shanties were tidy, the stable and pig-pen clean, the manure removed weekly by the farmers in the neighborhood. I directed that the chaff be collected and burnt and piles of fecal matter be covered.

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#### 34—INSPECTION AT MONTROSE, SUSQUEHANNA COUNTY.

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By L. H. TAYLOR, M. D., *Medical Inspector.*

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WILKES-BARRE, PA., *October 11, 1891.*

I yesterday visited Montrose and spent the day in company with Burgess H. C. Jessup and Mr. James P. Taylor, member of the sanitary committee, in inspecting various parts of the town, looking into wells, outhouses, etc.

In regard to the presence of typhoid fever I am somewhat at a loss to determine the true condition of affairs, as there seems to be difference of opinion among the physicians of the place. Dr. Richardson, one of the oldest physicians in the place, assured me that he had never seen but one case of typhoid in Montrose, and that occurred a number of years ago. He does not think there are any cases at present.

Dr. Macky stated that in a practice of six years he had not known of a single case, and did not think there were at present any. Dr. Gardner, who is at present attending the only two cases of fever that I could hear of in the town, says he has seen but one case of typhoid, and that several months ago.

He has treated the three cases of fever that have occurred on Church street, beside the one that died, and did not regard them as typhoid. He states that these were all cases of continued fever without any characteristic typhoid symptoms. He does not think there have been any typhoid cases in recent years.

Dr. Baldwin, homeopathist, regards the present cases as typhoid, though he has not seen them. He attended Mr. Warner, who died, and considers that he had typhoid fever. He also considers that there have been several cases in recent years in the same locality (Church street).

I did not have any opportunity of making personal examination of any suspected patients, as all had progressed far in convalescence and were without fever. Inasmuch as I could learn of but two cases of typhoid in the present year, I do not consider that the disease has assumed the proportions of an epidemic, threatening the general health of the borough.

As to water supply there is none excepting private wells, nor is there any system of sewers.

The disposal of excreta is by ordinary privies, many of which are the ordinary dangerous vaults, which too often are closer to the wells than a strict regard for safety would justify. Many citizens, however, have abandoned the vaults and use the box and dry earth or sifted ashes. I did not find nuisances at all prevalent in the town. There are a few privies back of South Main street, located on an open ditch, which serves as a drain for house and surface water, and perhaps for some sewage.

There are a few drains throughout the city covered which were constructed for the disposal of slop water, etc., from houses not for excrement.

As to the complaint made in the letter which you forwarded to me I would say:

*First.* The barn adjoining the H. W ——— place is built upon the solid rock, which seems to dip in the opposite direction from this well. There is, however, a small pool of liquid which, with surface drainage might, in time of a storm, wash down toward the W ——— well. In its present condition it is not seriously bad, but it should not be there at all, and inasmuch as it trespasses in its overflow upon neighboring property, the council should require the owner to prevent its overflow, and also to prevent its accumulation. The privy on this adjoining property is not many yards from the well, but as it was at the time of my visit supplied with a box and dry earth, I know of no better arrangement to suggest in the absence of any public sewers.

*Second.* The foulest kind of cesspool, some distance further up the hill, is not at present so situated as to contaminate the well on the W ——— place, as the dip of the rock seems to be in the opposite direction, and all surface drainage at this point would flow in the opposite direction. This cesspool, however, on general principle, should be well supplied with lime and cleaned often enough to prevent offense to the neighborhood. The general condition of affairs was better than I expected. The gutters were not offensive. I presume that recent rains, together with a sharp frost the night before my visit, conspired to make the appearance of things more favorable than perhaps would have been the case had the inspection been made during the heat of summer.

*Third.* The public cistern mentioned is in bad condition and should forthwith be emptied, cleansed and disinfected.

There is a blind stone drain under the street in the neighborhood in question, the location and outlet of which, if it have any, are uncertain. It should be traced up, opened and cleansed.

I would suggest that you impress upon the council of Montrose:

1. The liability in a town unsewered of all wells to become contaminated, and the importance of seeking a pure water supply at an early date.

2. The need of removing the privies that are located on the open ditch mentioned in this report, and having the same supplied with boxes and dry earth.

3. The importance of having all privies emptied and cleansed sufficiently often to prevent their becoming offensive and sources of contamination to wells.

4. I would recommend that the closed drain on Church street be opened and cleansed and its course ascertained, and thus settle the question as to whether it may have any influence in contaminating the public well and public cistern on said street. I would recommend also that the public cistern on this street be emptied and its sediment removed.

5. The overflow from the barn adjoining the W— — place should be so disposed of so as to prevent its flowing over to the neighboring property.

6. I would also recommend that the water from the two wells examined by Dr. Cresson be boiled before being used for drinking purposes.

In conclusion, I would say that I met the burgess and several members of the borough council, and they impressed me as intelligent men, anxious to do all in their power to maintain the health and promote the welfare of their town.

E. H. True is president of the council and H. C. Jessup is burgess.

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(b) Letter of Secretary to the Burgess.

October 16, 1891.

Mr. H. C. JESSUP, *Chief Burgess, Montrose, Pa.:*

DEAR SIR: I have just received the report of Medical Inspector Taylor of his investigation into the sanitary condition of your borough. While I am happy to say that, as compared with many towns, which his duties in connection with the State Board of Health have led him to visit, he finds Montrose exceptionally clean and well policed, and is not led to think that there has been any very unusual prevalence of febrile diseases, and especially of typhoid fever, yet he is impressed with the fact that certain dangers threaten you in the near future, from the fact that you depend entirely upon wells for your drinking water, and that you have no system of sewerage. Under these conditions, the pollution of the drinking wells is a mere question of time.



Two courses are open to you. Either to obtain an abundant supply of pure drinking water from some source outside the town, or to empty and disinfect and fill up all privies, and substitute the dry earth closet system by ordinance in every instance.

In the meantime I make the following recommendations, which I trust your council will see the wisdom of endorsing and at once putting in force:

*First.* The removal of all the privies at the back of South Main street, located on an open ditch which serves as a drain for house and surface water, and perhaps for some sewage, and generally the substitution of the dry closet in place of the ordinary vault.

*Secondly.* The importance of having all privies emptied and cleaned sufficiently often to prevent their becoming offensive and a source of contamination to wells.

*Thirdly.* The opening and cleansing of the closed drain on Church street, and the ascertaining of its course with regard to the contamination of a public well and cistern on said street. The public cistern on this street be emptied and its sediments removed.

*Fourthly.* The disposal of the overflow from the barn adjoining the place so as to prevent its flowing over the neighboring property.

*Fifthly.* That the water from the two wells examined by the State Board of Health be boiled before being used.

I have the honor to be,

Yours respectfully,

BENJ. LEE,  
*Secretary.*

APPENDIX C.

ANNUAL REPORTS OF CITIES AND TOWNS.

- 1. Carbondale.
- 2. Chester.
- 3. Coatesville.
- 4. Johnstown.
- 5. Lebanon.
- 6. Meadville.
- 7. Norristown.
- 8. Oil City.
- 9. Philadelphia.
- 10. Scranton.
- 11. Titusville.
- 12. Well-boro'.
- 13. Williamsport.

ANNUAL REPORT OF SECRETARY OF THE BOARD OF HEALTH  
OF THE CITY OF CARBONDALE.

Made to the State Board of Health of Pennsylvania, for four months beginning September 2, 1890, and ending December 31, 1890.

1. Name and address of members of the board.

| NAME.                                        | Postoffice address. |
|----------------------------------------------|---------------------|
| Samuel D. Jones, Secretary, . . . . .        | Carbondale.         |
| D. Leland Bailey, M. D., Chairman, . . . . . | "                   |
| H. C. Wheeler, M. D, Member, . . . . .       | "                   |
| John F. Moffitt, Member, . . . . .           | "                   |
| John Copeland, Member. . . . .               | "                   |
| L. S. Brumell, Health Officer, . . . . .     | "                   |

- 2. Six meetings have been held by the board during the four months.
- 3. The following improvements or changes have been made in this city as regards water supply, drainage and sewerage, or in the methods employed in disposing of excreta: Sewers have been constructed, and a public dumping ground is secured outside the city limits.
- 4. Nuisances, 185; removed, 104.

## 5 Communicable diseases.

| NAME OF DISEASE.         | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|--------------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . . . .     |               |                |                   |                         |                                               |
| Diphtheria, . . . . .    | 18            | 5              |                   | 13                      |                                               |
| Scarlet Fever, . . . . . |               |                |                   |                         |                                               |
| Typhoid Fever, . . . . . | 5             |                |                   | 4                       |                                               |

6. These diseases are reported to the board by the physicians in attendance in accordance with the law, ordinance or regulation requiring such reports.

7. When cases of the communicable diseases have been reported, the sanitary officer placards the house and the usual precautions are taken to prevent the spread of the disease.

8. Houses in which cases of small-pox, diphtheria and scarlet fever occurred are placarded.

11. Schools. No special cases have come under observation in which unhealthy conditions existed.

12. There are particularly unhealthy localities. The cause of such unhealthfulness is that the soil is completely saturated with the overflow from privies.

13. More sewerage suggested for improving the sanitary condition.

14. No accidents; nor has sickness or death resulted from accidental causes, drowning, fires and kerosene accidents.

16. No instances of food adulteration or injurious effects from it.

17. No cases of diseases of animals which have occurred, and any cases of relation or apparent relation between such diseases and human diseases.

18. The by-laws adopted by the board are not complete yet.

19. No other work of interest which has been done by the board during the year.

21. The sanitary officer receives \$50 per month. The secretary, \$16.66.

SAMUEL S. JONES,  
Carbondale.

January, 1891.

## 2 -ANNUAL REPORT OF SECRETARY OF THE BOARD OF HEALTH OF THE CITY OF CHESTER, CHESTER COUNTY,

Made to the State Board of Health of Pennsylvania, for the term beginning April 9, 1890, and ending December 31, 1891.

1. The name and address of each member of the board is

| NAME.                                      | Postoffice address.         |
|--------------------------------------------|-----------------------------|
| Charles B. Ross, Secretary, . . . . .      | "News" Office, Chester, Pa. |
| Benjamin W. Blakely, Chairman, . . . . .   | Chester, Pa.                |
| George McCall, Member, . . . . .           | " "                         |
| E. W. Perkins, M. D., Member, . . . . .    | " "                         |
| J. Frank Evans, M. D., Member, . . . . .   | " "                         |
| William D. Platt, M. D., Member, . . . . . | " "                         |
| John H. Mirkil, Health Officer, . . . . .  | " "                         |

2. Thirty-seven meetings have been held by the board during the year; 34 regular, 3 special.

3. No improvements or changes been made as regards water supply, drainage and sewerage, or in the method employed in disposing of excreta.

4. Four hundred nuisances have been reported.

5. Three hundred and eighty-one have been removed.

| NAME OF DISEASE.         | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|--------------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . . . .     | .....         | .....          | .....             | .....                   | .....                                         |
| Diphtheria, . . . . .    | .....         | 9              | 21                | 11                      | 2                                             |
| Scarlet fever, . . . . . | .....         | 2              | 21                | 21                      | 1                                             |
| Typhoid fever. . . . .   | .....         | 11             | 23                | 23                      | 1                                             |

6. These diseases are to some extent reported by the physicians in attendance with the law ordinance or regulation requiring such reports.

7. When cases of the communicable diseases have been reported prompt action is taken to prevent a spread of the disease.

8. No houses in which cases of small-pox, diphtheria and scarlet fever occurred were placarded.

9. Cholera infantum, consumption and pneumonia were more than usually prevalent during the year.

10. Nothing interesting from a sanitary point of view.

11. Schools. No pupil is permitted to attend school without a permit from this board, and a certificate from the attending physician, indicating that all danger is past.

12. There are one or two particularly unhealthy localities from want of sewerage

- 13 Better drainage is suggested for improving the sanitary condition.



14. Accidents. Twelve accidental deaths, railroad and drowning, have occurred.
15. No cases of disease appear to have been caused by polluted water, cesspool or sewer gas, defective ventilation, lead, arsenical, or other forms of poisoning.
16. No instances of food adulteration, or injurious effects from it.
17. No diseases of animals.
18. By-laws were adopted, copy enclosed.
19. Annual report of councils gives an account of other work of interest which has been done.
20. No suggestion as to the health laws of the state.
21. The health officer is paid \$60 per month, or \$720 per year. The secretary is allowed \$25 per month, or \$300 per year.

CHARLES B. ROSS,  
*Secretary.*

April 6, 1891.

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### 3--ORGANIZATION OF THE BOARD OF HEALTH OF COATESVILLE

COATESVILLE, PA., May 26, 1891.

The members of our board of health are:

Dr. E. V. Swing, *chairman*; Mr. John Speakman, (burgess), *president*;  
Dr. S. Horace Scott, Mr. Harry Branson, Mr. John Entriken, Mr. O. C.  
Jackson; Ida V. Riel, M. D., *Secretary*.

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### 4--ANNUAL REPORT OF THE BOARD OF HEALTH OF JOHNSTOWN, PENNA.

JOHNSTOWN, PA., January 12, 1891.

GENTLEMEN: In compliance with the act of assembly approved May 23, 1889, the board of health begs leave to herewith submit its report of operations for that portion of the year 1890 during which it was in existence, year closing December 31, 1890. An ordinance passed by your honorable bodies and approved by the mayor on the 27th of May, 1890, provided for the appointment of the board of health; subsequently the mayor appointed Dr. A. N. Wakefield, Dr. F. Schill, Mr. John J. Pfarr, Mr. Lackey Kelley and James M. Shumaker the members of the said board. The board was formally organized on the 11th of June, 1890, by the election of Dr. A. N. Wakefield president and Geo. J. Askers as secretary. On the 24th of July Mr. Jas. A. Sloan was chosen health officer and assumed his duties August 1, 1890. The salary of the secretary was fixed at two hundred dollars per annum, and that of the health officer at sixty dollars per month. On the 25th of July the councils passed an ordinance making an appropriation of \$1,500 to defray the expenses of the board and pay the salaries of its officers. Of this appropriation there has been \$721.44 used, leaving a balance to the credit of

the board of \$778.56. The amount expended includes all necessary printing, office furniture, salaries and other incidental expenses. The balance in treasury the board believes will be ample for the remainder of the year. The direct cash receipts from the operations of the board for the five months of its existence have been \$5.20. This has been paid into the city treasury. The record of vital statistics being necessarily incomplete, owing to the fact that the Board has been in existence but five months, no positive conclusions can be drawn. It seems safe, however, to assume that the death rate per annum will not exceed fifteen in every thousand, including both adults and children. This is regarded as a favorable condition when the circumstances are considered. A tabulated statement of the deaths for each month is herewith given.

|                      |            |
|----------------------|------------|
| August, . . . . .    | 38         |
| September, . . . . . | 39         |
| October, . . . . .   | 28         |
| November, . . . . .  | 23         |
| December, . . . . .  | 27         |
| Total, . . . . .     | <u>155</u> |

Of the decedents eighty-five were males and seventy were females; twenty-eight were of foreign birth and one hundred and twenty-seven of native birth; of the latter number eighty-three were born in Johnstown; fifty-seven were infants under one year and thirteen were children between one and five years of age. During the five months there were three hundred and fifty births reported. The following is a tabulated statement of births by months:

|                      |            |
|----------------------|------------|
| August, . . . . .    | 59         |
| September, . . . . . | 95         |
| October, . . . . .   | 59         |
| November, . . . . .  | 72         |
| December, . . . . .  | 65         |
| Total, . . . . .     | <u>350</u> |

The number of contagious diseases reported by the physicians was one hundred and five. These diseases were reported as follows:

|                                      |            |
|--------------------------------------|------------|
| Scarlet fever, . . . . .             | 51         |
| Typhoid fever, . . . . .             | 38         |
| Diphtheria, . . . . .                | 10         |
| Measles, . . . . .                   | 4          |
| Diphtheritic croup, . . . . .        | 1          |
| Cerebro-spinal meningitis, . . . . . | 1          |
| Total, . . . . .                     | <u>105</u> |

The largest number of contagious diseases reported in one month was in August and the smallest number in December. There were fourteen death from contagious diseases, ten of typhoid fever and one each of

scarlet fever, diphtheria, cerebro-spinal meningitis, diphtheritic croup. During the five months of the board's operation there were abated two hundred and ninety-two nuisances on written or verbal orders of the health officer. It may be proper to state here that the operations of the board have rid the city entirely of hog pens and their inhabitants, the existence of which in cities is almost incompatible with the public health.

The board can readily see many threatening surroundings in numerous localities throughout the city, which will necessitate vigorous measures. Sewers are badly needed.

Another source of trouble is the garbage that is found almost everywhere. The great amount of produce and fruit that is required for the consumption of our city, brought here by our merchants and others and distributed through the various channels of business to the consumer, necessarily results in an accumulation of a large quantity of matter that is fit only for cremation, and as there is no garbage furnace some disposition must be made of it. Our officer finds it accumulating in cellars, yards and out-houses or dumped into alleys, vacant lots, and other places. The material is generally placed there under cover of darkness. The atmosphere becomes poisoned and the health and comfort of the entire community is made to suffer. When our officer serves notices on the parties to remove it, he is met with inquiries, What are we to do with it? Where shall we put it? Realizing the financial condition of the city and its inability to at present construct a garbage furnace, we would recommend that councils secure a location somewhere outside the city limits, where the offal and refuse matter can be burned or disinfected. The board would also recommend that the collection of garbage be taken in control by the city, a small charge to be made to each citizen to defray expenses. This would insure a systematic and complete collection of garbage, which under the present hap-hazard system is impossible.

Respectfully submitted.

BOARD OF HEALTH.

A. N. WAKEFIELD,  
*President.*

GEO. J. AKERS,  
*Secretary.*

JAMES A. SLOAN,  
*Health Officer.*

# 5—ANNUAL REPORT OF THE PRESIDENT OF THE BOARD OF HEALTH OF THE CITY OF LEBANON, LEBANON COUNTY, PA.

Made to the State Board of Health of Pennsylvania, for the year beginning January 1, 1890, and ending December 31, 1890.

1. The name and address of each member of the board is

| NAME.                                       | Postoffice Address. |
|---------------------------------------------|---------------------|
| C. S. Shaak, Secretary, . . . . .           | Lebanon, Pa.        |
| Dr. S. T. Lineaweaver, Chairman, . . . . .  | " "                 |
| Dr. John K. Reinoehl, Member, . . . . .     | " "                 |
| Samuel L. Light, Member, . . . . .          | " "                 |
| Dr. John Walters, Member, . . . . .         | " "                 |
| John H. Shaak, Member, . . . . .            | " "                 |
| George A. Hunter, Health Officer, . . . . . | " "                 |

2. Eight meetings have been held by the board during the year.

3. No improvements or changes have been made as regards water supply, drainage and sewerage, or in the methods employed in disposing of excreta?

4. Nuisances. Twenty-two nuisances have been reported. All have been removed. At the western end of the city is an obstruction by a large cinder bank damming water back on western end of city.

5. Communicable diseases :

| NAME OF DISEASE.         | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|--------------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . . . .     | . . . . .     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |
| Diphtheria, . . . . .    | . . . . .     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |
| Scarlet fever, . . . . . | . . . . .     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |
| Typhoid fever, . . . . . | . . . . .     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |

No report from physicians.

6. No diseases are reported by the physicians in attendance in accordance with the law, ordinance or regulation requiring such reports?

7. No communicable diseases have been reported.

8. No houses in which cases of small-pox, diphtheria and scarlet fever occurred were placarded.

9. No diseases were more than usually prevalent during the year.

10. Nothing to report.

11. Schools. No cases under observation in which unhealthy conditions existed.

12. Yes. Western end of city. Cause : Cinder bank above alluded to?

13. We suggest for improving the sanitary condition of city, a law that will give the Board of Health the power to impose penalties.

14. No accidents.

15. Nothing reported.

16. No instances of food adulteration, or injurious effects from it.

17. No diseases of animals.

18. No report.

19. The board of health of this city is powerless to enforce obedience to its orders owing to the fact that the city solicitor construes the act of 1889, relating to the authority of the board of health to enforce its demands by imposing penalties is not specifically stated in the act.

20. The wording of the act of 1889, in no mistaken terms as to the imposition of penalties. This construction of the law by our city's solicitor, makes the board of health a jibe for all persons committing nuisances, they abate them if they choose, if not we are penniless to force them.

21. The secretary has received four dollars per month for five months, and the sanitary policeman ten dollars per month for five months, for the reason that the appropriation of councils has not been sufficient to pay more. The balance of the year they have received nothing.

S. T. LINEAWEAVER, *President,*  
*Lebanon, Pa.*

*April 4, 1891.*

## 6—ANNUAL REPORT OF THE SECRETARY OF THE BOARD OF HEALTH, OF THE CITY OF MEADVILLE, PA.

Made to the State Board of Health of Pennsylvania, for the year beginning January 1, 1890, and ending December 31, 1890.

1. Name and address of each member of the board, is

| NAME.                                        | Postoffice Address. |
|----------------------------------------------|---------------------|
| Charles P. Woodring, Secretary, . . . . .    | Meadville, Pa.      |
| T. B. Lashell, Chairman, . . . . .           | " "                 |
| J. H. Montgomery, Member, . . . . .          | " "                 |
| A. Orrit, Member, . . . . .                  | " "                 |
| Cyrus Harper, Member, . . . . .              | " "                 |
| Chas. P. Woodring, Health Officer, . . . . . | " "                 |

2. Four meetings have been held by the board during the year.

3. No improvements or changes have been made, as regards water supply, drainage and sewerage, or in the methods employed in disposing of excreta.

4. Three hundred nuisances have been reported. All have been removed.



## 5. Communicable diseases.

| NAME OF DISEASE.   | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|--------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . .   | None.         | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |
| Diphtheria, . . .  | 26            | 6              | . . . . .         | 10                      | . . . . .                                     |
| Scarlet fever, . . | 3             | 1              | . . . . .         | 3                       | . . . . .                                     |
| Typhoid fever, .   | 12            | 2              | . . . . .         | 10                      | . . . . .                                     |

6. These diseases are reported to the board by the physicians in attendance in accordance with the law, ordinance or regulation requiring such reports.

7. The causes were looked for and, when found, removed.

8. Some houses in which cases of small-pox, diphtheria and scarlet fever occurred were placarded.

9. There was not an unusual amount of sickness of any kind.

10. There was not much sickness, and what there was was easily handled and controlled.

11. Schools. There were special cases in which unhealthy conditions existed.

12. There are not any particularly unhealthy localities.

13. The sanitary condition is above the average.

14. No accidents.

15. There are no facts regarding any cases of disease which appeared to have been caused by polluted water, cesspool or sewer gas, defective ventilation, lead, arsenical, or other forms of poisoning.

16. No instances of food adulteration, or injurious effects from it.

17. No diseases of animals.

18. No by-laws adopted in 1891.

19. No work of interest done by the board during the year.

20. The experience of the board does not suggest any changes which ought to be made in the health laws of the state.

21. No pay received by any member of board of health except health officer, whose salary is \$200. No pay has ever been received by any other member of board, nor had any been expected.

CHAS. P. WOODRING,  
Meadville, Pa.

March 23, 1891.

# 7 ANNUAL REPORT OF THE SECRETARY OF THE BOARD OF HEALTH, OF THE BOROUGH OF NORRISTOWN, PENNA.,

Made to the State Board of Health of Pennsylvania, for the year beginning January 1, 1890, and ending December 31, 1890.

1. The name and address of each member is

| NAME.                                         | Postoffice address.            |
|-----------------------------------------------|--------------------------------|
| Dr. Harry H. Whitcomb, Secretary, . . . . .   | 622 DeKalb street, Norristown. |
| William A. Evans, Esq., Chairman, . . . . .   | Norristown, Pa.                |
| S. E. Nyce, Member, . . . . .                 | " "                            |
| M. Y. Fish, Member, . . . . .                 | " "                            |
| Dr. E. S. Corson, Member, . . . . .           | " "                            |
| Dr. J. K. Weaver, Member, . . . . .           | " "                            |
| Dr. P. Y. Eisenberg, Member, . . . . .        | " "                            |
| Dr. Charles Bradley, Member, . . . . .        | " "                            |
| E. M. Daniels, Esq., Member, . . . . .        | " "                            |
| Dr. H. H. Whitcomb, Health Officer, . . . . . | " "                            |

2. Twenty meetings have been held by the board during the year.

3. No improvements or changes have been made in the borough as regards water supply, drainage and sewerage, or in the methods employed in disposing of excreta. The water basin has been cleaned and are gradually doing away with wells.

4. Ten hundred and seventy-one nuisances have been reported to the board. Two hundred and eleven have been removed. Two hundred and sixteen complaints declared to be nuisances. Ten hundred and seventy-one complaints made in a year—of this number only two hundred and sixteen were such as the board could inquire into and declare to be nuisances, mostly of trivial or a personal nature for private abatement. Five only we were unable to abate, which our solicitors said we had no power to correct. These being the drainage of cellars, closing of wells and removing of cesspools from near street.

5. Communicable diseases :

| NAME OF DISEASE.         | No. of cases. | No. of deaths. | No of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|--------------------------|---------------|----------------|------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . . . .     |               |                |                  |                         |                                               |
| Diphtheria, . . . . .    | 12            | 5              | 1                | *8                      | 1                                             |
| Scarlet fever, . . . . . | 28            | 2              | †1               |                         |                                               |
| Typhoid fever, . . . . . | 21            | †11            |                  |                         |                                               |

\*These were isolated cases and kept pretty close.

†Very many more than reported; the disease, being so mild many employed no doctor.

‡I am sure more existed but were not reported.

6. Some report very promptly, others do not, and keep me all the time inquiring about them. Our ordinance requires, but our solicitor says we cannot compel, so we have avoided law.

7. When cases of the communicable diseases have been reported, we keep the children from school and keep them away from other children, as much as possible. Fumigation.

8. No houses in which cases of small-pox, diphtheria and scarlet fever occurred were placarded.

9. The diseases more than usually prevalent during the year were measles, la grippe, dysentery and typhoid fever.

10. Nothing to communicate.

11. No special cases have come under observation in which unhealthy conditions existed. We send children home at once.

12. There are particularly unhealthy localities the cause of which is low, flat drainage and well water.

13. We suggest for improving the sanitary condition, power to enforce the ordinances we have by some general law.

14. Accidents. Drowning has occurred.

15. Nothing to communicate regarding any cases of disease which appeared to have been caused by polluted water, cesspool or sewer-gas, defective ventilation, lead, arsenical, or other forms of poisoning.

16. Instances of food adulteration have come to our knowledge. Adulterated milk. No ill effect traced; shall try to correct the present year.

17. No diseases of animals.

18. No report.

19. The board during the year have been trying to give our people a pure water supply.

20. We need power. We have no power whatever to compel a compliance with our ordinances. Must depend simply upon the good wishes and fear of the people.

21. We pay \$240 a year for Health Officer.

HARRY H. WHITCOMB,  
622 DeKalb street, Norristown.

March 30, 1891.

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## 8—ANNUAL REPORT OF THE BOARD OF HEALTH OF OIL CITY.

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OIL CITY, PA., *January 24, 1891.*

GENTLEMEN: In accordance with the act of assembly requiring us to submit annually, in January, a report of our work for the preceding year, would say we have abated twelve hundred and fifty nuisances.

We are inclined to believe this a favorable showing, and the amount of work accomplished in excess of that of the year previous proves, we think, the wisdom of employing a health officer, whose full time can be given to the growing work of the board.

During the year there were reported to the board one hundred and five deaths, one hundred and thirty-nine births, fifty-four marriages, one hundred and ninety-two cases of infectious and contagious diseases.

Unquestionably great sanitary benefit will accrue from the five thousand eight hundred and ninety-three feet of sewer built on Butler alley, Pearl avenue, Duncomb street and Elm street, and the six thousand five hundred and sixty feet arranged to build on Plummer road, Pine,

Center and Second streets. But the city is growing rapidly, and continued favorable action in the way of liberally supplying further sewerage, as well as the paving of as many streets as possible, is, therefore, most earnestly recommended.

Attention is called to the insufficient supply of city water to the inhabitants of Palace Hill, thereby compelling the use of water from the springs in that section, breeding much sickness in consequence, and as we are closing the springs on account of the bad condition of the water, a proper supply of city water should be furnished as soon as possible, to take the place of these springs.

We would again call attention to the dangerous condition of some of the railroad crossings in the city that have not as yet been provided with safety gates, and we would also recommend the passage of an ordinance requiring horses, when standing on the street, to be properly tied, or left directly in charge of a competent person.

In regard to the pest house, situated on Clark's Summit, the matter of ownership and right of occupancy thereof is not in a clear or satisfactory condition. We would recommend that the title to the property be examined and properly vested in the city, and if it is desirable to allow the present occupant to continue there, that it be done with the understanding that should an exigency arise, requiring the use of the same by the board of health, it be immediately vacated for that purpose.

We submit the following statement of the health fund for the year:

|                                                     |          |          |
|-----------------------------------------------------|----------|----------|
| Balance to credit of fund January 1, 1890 . . . . . | \$189 63 |          |
| Appropriation April 1, 1890 . . . . .               | 750 00   |          |
|                                                     | <hr/>    | \$939 63 |

Against which warrants were drawn as follows:

|                                                                                             |          |          |
|---------------------------------------------------------------------------------------------|----------|----------|
| S. H. Gray, secretary . . . . .                                                             | \$120 00 |          |
| H. M. Good, health officer, . . . . .                                                       | 480 00   |          |
| Stationery, printing, etc., . . . . .                                                       | 156 25   |          |
| Sundry expenses, burying dead animals, burning<br>rubbish, analyzing water, etc., . . . . . | 75 95    |          |
| Total, . . . . .                                                                            | <hr/>    | \$832 20 |

Leaving balance . . . . . \$107 43

as unexpended, which will be insufficient to carry us through to the first of April 1891.

Respectfully submitted by order of the Board of Health.

B. F. BRUNDRED, *President*.

Attest:

S. H. GRAY, *Secretary*.

EXTRACTS FROM THE ANNUAL REPORT OF THE BOARD OF  
HEALTH OF PHILADELPHIA FOR 1890.

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Prepared by WILLIAM B. ATKINSON, M. D.

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The death rate for the year was 20.75 per thousand, a slight excess over the two previous years.

The number of deaths returned was twenty-one thousand seven hundred and thirty-two (21,732), an increase of eleven hundred and ninety-six (1,196) over the previous year.

The number of births reported was twenty-seven thousand and eighty (27,080).

The number of marriages was seventy-one hundred (7,100). In this connection it must be remembered that owing to the absence of a marriage law in New Jersey, a large number of marriages take place outside of the city to avoid the law requiring a permit, hence these are not recorded in the city.

The record of deaths is complete, while that of births falls short of the actual number very considerably. It is believed that at least ten thousand each year are never recorded.

The increase in the number of deaths is accounted for by the epidemic of influenza, which was first felt in this city in the latter part of December, 1889, continuing with great virulence until the second week of February, 1890. It is believed that about 1,300 deaths were caused by this epidemic in a period of seven weeks, perhaps the highest death rate ever experienced in this city, except the epidemic of yellow fever of 1793, which continued during the warm weather and of which 4,041 are known to have died out of a population of nearly 45,000 persons.

The most striking increases were in the diseases of the circulatory and respiratory systems:

*Cholera Infantum*—There were 918 deaths, an increase of eighty over the previous year.

*Consumption of the Lungs*—The deaths amounted to two thousand seven hundred and sixty (2,760), an increase of two hundred and twenty-eight (228).

*Diphtheria*—Deaths, five hundred and twenty-eight (528); increase, one hundred and fifty-three (153).

*Scarlet Fever*—Deaths, one hundred and eighty-nine (189); increase, one hundred and nine (109).

*Typhoid Fever*—Deaths, six hundred and sixty-six (666); decrease of seventy (70).

*Inflammation of Lungs*—Deaths, two thousand and twenty-six (2,026); increase, four hundred and forty-four (444).



The following table shows the ratio of deaths, with population, for the past thirty years:

| YEARS.          | Population. | Deaths. | Deaths to<br>1,000 persons<br>living. | Persons<br>living to<br>one death. |
|-----------------|-------------|---------|---------------------------------------|------------------------------------|
| 1861, . . . . . | 576,408     | 13,540  | 23.49                                 | 42.57                              |
| 1862, . . . . . | 587,287     | 13,864  | 23.60                                 | 42.36                              |
| 1863, . . . . . | 598,166     | 14,220  | 23.73                                 | 42.06                              |
| 1864, . . . . . | 608,045     | 15,875  | 26.10                                 | 38.30                              |
| 1865, . . . . . | 618,924     | 15,633  | 25.25                                 | 39.59                              |
| 1866, . . . . . | 620,803     | 15,362  | 22.80                                 | 40.99                              |
| 1867, . . . . . | 640,682     | 12,660  | 19.76                                 | 50.60                              |
| 1868, . . . . . | 651,561     | 13,391  | 20.39                                 | 48.65                              |
| 1869, . . . . . | 662,440     | 13,428  | 20.27                                 | 49.33                              |
| 1870, . . . . . | *674,022    | 15,317  | 22.72                                 | 44.00                              |
| 1871, . . . . . | 700,000     | 15,485  | 22.12                                 | 45.20                              |
| 1872, . . . . . | 725,000     | 18,987  | 26.19                                 | 38.18                              |
| 1873, . . . . . | 750,000     | 15,224  | 20.29                                 | 49.26                              |
| 1874, . . . . . | 775,000     | 15,238  | 19.66                                 | 50.86                              |
| 1875, . . . . . | 800,000     | 17,805  | 22.25                                 | 41.93                              |
| 1876, . . . . . | 825,594     | 18,892  | 22.88                                 | 43.69                              |
| 1877, . . . . . | 850,856     | 16,004  | 18.81                                 | 53.16                              |
| 1878, . . . . . | 976,118     | 15,743  | 17.97                                 | 55.65                              |
| 1879, . . . . . | 901,380     | 15,473  | 17.17                                 | 58.25                              |
| 1880, . . . . . | *849,980    | 17,711  | 20.91                                 | 47.82                              |
| 1881, . . . . . | 868,000     | 19,515  | 22.48                                 | 44.47                              |
| 1882, . . . . . | 886,539     | 20,059  | 22.62                                 | 44.19                              |
| 1883, . . . . . | 907,041     | 20,076  | 22.13                                 | 45.18                              |
| 1884, . . . . . | 927,995     | 19,999  | 21.55                                 | 46.40                              |
| 1885, . . . . . | 949,432     | 21,392  | 22.53                                 | 44.38                              |
| 1886, . . . . . | 971,363     | 20,005  | 20.59                                 | 48.55                              |
| 1887, . . . . . | 993,801     | 21,719  | 21.85                                 | 45.75                              |
| 1888, . . . . . | 1,016,758   | 20,372  | 20.04                                 | 49.90                              |
| 1889, . . . . . | 1,040,245   | 20,536  | 19.74                                 | 50.65                              |
| 1890, . . . . . | *1,046,964  | 21,732  | 20.76                                 | 48.18                              |

The following comparative table shows the number of deaths from diphtheria and scarlet fever for the past twenty-three years:

| YEARS.          | Diphtheria. | Scarlet fever. | YEARS.          | Diphtheria. | Scarlet fever. |
|-----------------|-------------|----------------|-----------------|-------------|----------------|
| 1868, . . . . . | 119         | 234            | 1880, . . . . . | 323         | 296            |
| 1869, . . . . . | 182         | 799            | 1881, . . . . . | 457         | 148            |
| 1870, . . . . . | 172         | 956            | 1882, . . . . . | 983         | 310            |
| 1871, . . . . . | 145         | 262            | 1883, . . . . . | 1,006       | 561            |
| 1872, . . . . . | 150         | 174            | 1884, . . . . . | 680         | 540            |
| 1873, . . . . . | 110         | 319            | 1885, . . . . . | 600         | 375            |
| 1874, . . . . . | 179         | 451            | 1886, . . . . . | 411         | 248            |
| 1875, . . . . . | 652         | 1,032          | 1887, . . . . . | 416         | 159            |
| 1876, . . . . . | 708         | 328            | 1888, . . . . . | 350         | 235            |
| 1877, . . . . . | 458         | 379            | 1889, . . . . . | 375         | 298            |
| 1878, . . . . . | 464         | 554            | 1890, . . . . . | 528         | 189            |
| 1879, . . . . . | 321         | 336            |                 |             |                |

\* U. S. census—the intervening years population estimated.

## BIRTHS.

The number of births during the year amounted to twenty-seven thousand eight hundred and fifty-eight (27,858), an increase of three hundred and sixty-seven (367) over the previous year; the ratio of births to population being 26.60 per thousand, or 1 in each 37.6 persons.

The number of male children amounted to fourteen thousand five hundred and fifty-two (14,552); the number of females to thirteen thousand three hundred and six (13,306).

The number of illegitimate births amounted to five hundred and seventy-three (573).

| 1890.           | Total. | BIRTHS. |        | BLACK. |     | STILLBORN. |     | Twins. | Triplets. | Illegitimate. |
|-----------------|--------|---------|--------|--------|-----|------------|-----|--------|-----------|---------------|
|                 |        | M.      | F.     | M.     | F.  | M.         | F.  |        |           |               |
| January, . . .  | 2,267  | 1,177   | 1,090  | 33     | 35  | 73         | 47  | 28     | ..        | 49            |
| February, . . . | 2,087  | 1,073   | 1,014  | 35     | 35  | 47         | 38  | 18     | ..        | 54            |
| March, . . .    | 2,188  | 1,133   | 1,055  | 26     | 38  | 57         | 43  | 30     | ..        | 34            |
| April, . . .    | 2,041  | 1,043   | 998    | 26     | 23  | 46         | 37  | 18     | ..        | 58            |
| May, . . .      | 2,135  | 1,129   | 1,006  | 26     | 26  | 76         | 52  | 17     | ..        | 68            |
| June, . . .     | 2,309  | 1,202   | 1,107  | 31     | 44  | 50         | 38  | 22     | ..        | 33            |
| July, . . .     | 2,482  | 1,319   | 1,163  | 37     | 22  | 75         | 50  | 26     | 1         | 53            |
| August, . . .   | 2,437  | 1,253   | 1,184  | 37     | 35  | 47         | 33  | 26     | ..        | 58            |
| September, . .  | 2,186  | 1,154   | 1,032  | 36     | 26  | 55         | 27  | 22     | ..        | 45            |
| October, . . .  | 2,356  | 1,246   | 1,110  | 40     | 21  | 58         | 55  | 17     | ..        | 41            |
| November, . .   | 2,486  | 1,315   | 1,171  | 51     | 35  | 66         | 42  | 20     | 2         | 47            |
| December, . .   | 2,884  | 1,508   | 1,376  | 31     | 24  | 51         | 39  | 20     | 1         | 33            |
| Total, . . .    | 27,858 | 14,552  | 13,306 | 409    | 364 | 701        | 501 | 264    | 4         | 573           |

The number of births in each quarter of the year was as follows:

|                                                     |               |
|-----------------------------------------------------|---------------|
| First quarter, ending March 31, 1890, . . . . .     | 6,542         |
| Second quarter, ending June 30, 1890, . . . . .     | 6,485         |
| Third quarter, ending September 30, 1890, . . . . . | 7,105         |
| Fourth quarter, ending December 31, 1890, . . . . . | 7,726         |
|                                                     | <u>27,858</u> |

## MARRIAGES.

The number of marriages registered during the year was seven thousand and one hundred and ninety-six (7,196), or about one person married in 72.74—an increase of two hundred and ninety-six (296) over the previous year.

|                                                     |              |
|-----------------------------------------------------|--------------|
| First quarter, ending March 31, 1890, . . . . .     | 1,582        |
| Second quarter, ending June 30, 1890, . . . . .     | 1,930        |
| Third quarter, ending September 30, 1890, . . . . . | 1,487        |
| Fourth quarter, ending December 31, 1890, . . . . . | 2,197        |
|                                                     | <u>7,196</u> |

The following table gives the birth place of those married :

*Nativities of the Parties.*

| NATIVITIES                 | BIRTHPLACE OF BRIDES. |          |          | Total of<br>grooms. |
|----------------------------|-----------------------|----------|----------|---------------------|
|                            | United<br>States.     | Foreign. | Unknown. |                     |
| Birth place of grooms—     |                       |          |          |                     |
| United States, . . . . .   | 3,499                 | 616      | 26       | 4,141               |
| Foreign, . . . . .         | 743                   | 2,107    | 2        | 2,852               |
| Unknown, . . . . .         | 29                    | 1        | 173      | 203                 |
| Total of brides, . . . . . | 4,271                 | 2,724    | 201      | 7,196               |

The number of marriages in which both parties were natives of the United States was three thousand four hundred and ninety-nine (3,499); those in which the parties were foreign born amounted to two thousand one hundred and seven (2,107); in one hundred and seventy-three (173) cases the nativities of both parties were not given.

The number of native grooms was four thousand one hundred and forty-one (4,141); the number of native brides was four thousand two hundred and seventy-one (4,271).

The number of foreign grooms was two thousand eight hundred and fifty-two (2,852); the number of foreign brides was two thousand seven hundred and twenty-four (2,724).

The following table gives the ages of the parties married :

*Ages of the Parties.*

| 1890.                     | AGES OF THE WOMEN. |           |           |           |           |           |           |           |            | Total of men. |
|---------------------------|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|---------------|
|                           | Under 20.          | 20 to 25. | 25 to 30. | 30 to 40. | 40 to 50. | 50 to 60. | 60 to 70. | 70 to 80. | Not given. |               |
| Ages of the men—          |                    |           |           |           |           |           |           |           |            |               |
| Under 20, . . . . .       | 30                 |           |           |           |           |           |           |           | 11         | 30            |
| 20 to 25, . . . . .       | 467                | 1,520     | 211       | 21        | 1         |           |           |           | 23         | 2,231         |
| 25 to 30, . . . . .       | 164                | 1,407     | 857       | 102       | 10        | 1         |           |           | 15         | 2,564         |
| 30 to 40, . . . . .       | 56                 | 427       | 553       | 417       | 24        | 4         |           |           | 4          | 1,496         |
| 40 to 50, . . . . .       | 5                  | 37        | 70        | 162       | 70        | 10        | 3         |           | 1          | 361           |
| 50 to 60, . . . . .       |                    | 1         | 10        | 42        | 47        | 24        | 1         |           | 2          | 126           |
| 60 to 70, . . . . .       |                    |           | 3         | 12        | 19        | 9         |           |           |            | 45            |
| 70 to 80, . . . . .       |                    |           |           | 6         |           | 5         | 3         |           |            | 14            |
| Not given, . . . . .      |                    | 6         | 1         | 2         |           |           |           |           | 320        | 329           |
| Total of women, . . . . . | 722                | 3,398     | 1,705     | 764       | 171       | 53        | 7         |           | 376        | 7,196         |

The number of men married under twenty years of age was thirty (30); the number of women amounted to seven hundred and twenty-two (722). The number of men married between twenty and twenty-five was two thousand two hundred and thirty-one (2,231); the number of women, three thousand three hundred and ninety-eight (3,398). Between seventy and eighty years of age fourteen (14) men and no women were married. There were three hundred and twenty-nine (329) men and three hundred and seventy-six (376) women whose ages were not given.

The following table gives the ages of those married under twenty-one years of age:

| Under 20.           | WOMEN UNDER 20. |     |     |     |     |     |     | Total. |
|---------------------|-----------------|-----|-----|-----|-----|-----|-----|--------|
|                     | 13.             | 14. | 15. | 16. | 17. | 18. | 19. |        |
| Men under 20—       |                 |     |     |     |     |     |     |        |
| 18, . . . . .       |                 |     | 1   | 1   |     | 9   |     | 11     |
| 19, . . . . .       |                 |     |     | 4   | 6   | 6   | 3   | 19     |
| 20, . . . . .       |                 |     |     |     |     |     |     |        |
| 20 to 25, . . . . . |                 |     |     |     |     |     |     |        |
| 25 to 30, . . . . . | 3               | 5   | 3   | 21  | 60  | 155 | 220 | 467    |
| 30 to 40, . . . . . |                 |     | 5   | 8   | 26  | 40  | 85  | 164    |
| 40 to 50, . . . . . |                 |     | 1   | 5   | 10  | 15  | 25  | 56     |
|                     |                 |     |     |     |     |     | 5   | 5      |
| Total, . . . . .    | 3               | 5   | 10  | 39  | 102 | 225 | 338 | 722    |

Three (3) females were married at thirteen (13) years, five (5) at fourteen and ten (10) at fifteen. Eleven (11) men were married at eighteen (18), nineteen (19) at nineteen (19); in all, thirty (30) men under twenty-one (21) years of age.

## MARRIAGES.

The following table will show the number of each sex in each division of age married during the year:

| 1890.              | Under 20. | 20 to 25. | 25 to 30. | 30 to 40. | 40 to 50. | 50 to 60. | 60 to 70. | 70 to 80. | Age not given. |
|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------------|
| Males, . . . . .   | 30        | 2,231     | 2,564     | 1,496     | 361       | 126       | 45        | 14        | 329            |
| Females, . . . . . | 722       | 3,398     | 1,705     | 764       | 171       | 53        | 7         |           | 376            |
| Total, . . . . .   | 752       | 5,629     | 4,269     | 2,260     | 532       | 179       | 52        | 14        | 705            |

## MORTALITY.

|                          |               |
|--------------------------|---------------|
| White, . . . . .         | 20,671        |
| Black, . . . . .         | 1,061         |
| Total, . . . . .         | <u>21,732</u> |
| Males, . . . . .         | 11,140        |
| Females, . . . . .       | 10,592        |
| Total, . . . . .         | <u>21,732</u> |
| Male adults, . . . . .   | 6,094         |
| Female adults, . . . . . | 6,163         |
| Total, . . . . .         | <u>12,257</u> |
| Male minors, . . . . .   | 5,046         |
| Female minors, . . . . . | 4,429         |
| Total, . . . . .         | <u>9,475</u>  |

## Actual deaths in the city:

|                                                                  |               |
|------------------------------------------------------------------|---------------|
| Deaths from specific diseases, . . . . .                         | 20,163        |
| Deaths from old age, . . . . .                                   | 817           |
| Deaths from violence (accident), homicide and suicide, . . . . . | 752           |
| Total, . . . . .                                                 | <u>21,732</u> |

In the above figures the still-born and premature births and bodies brought to the city are not included, thus showing the actual mortality.

The number of native born was sixteen thousand three hundred and seventy-seven (16,377); of foreign, four thousand eight hundred and two (4,802); while there were five hundred and fifty-three (553) whose nationality was unknown.

*Abscess.*—The number of deaths from this cause amounted to one hundred and nineteen (119).

12-16 91.



*Cancer*.—The deaths from this cause amounted to two hundred and fifteen (215).

*Cerebro-Spinal Meningitis*.—The number of deaths so reported amounted to twenty-five (25), a decrease of twelve (12) from the previous year.

*Consumption of the Lungs*.—The deaths from this cause amounted to two thousand seven hundred and sixty-four (2,764) an increase of two hundred and thirty two (232) during the year. Of these, two thousand four hundred and thirty-three (2,433) were adults, and three hundred and eleven (311) minors; one thousand nine hundred and twenty-six (1,926) were natives of the United States, seven hundred and nineteen (719) were foreign born and one hundred and nineteen (119) whose nationality was unknown.

The deaths in each month of the year from this cause were as follows:

|                     |     |                      |     |
|---------------------|-----|----------------------|-----|
| January, . . . . .  | 429 | July, . . . . .      | 228 |
| February, . . . . . | 246 | August, . . . . .    | 180 |
| March, . . . . .    | 228 | September, . . . . . | 196 |
| April, . . . . .    | 237 | October, . . . . .   | 219 |
| May, . . . . .      | 236 | November, . . . . .  | 194 |
| June, . . . . .     | 176 | December, . . . . .  | 195 |

The largest number of deaths occurred in the month of January, four hundred and twenty-nine (429), while the influenza epidemic prevailed, and the smallest in the month of June, one hundred and seventy-six (176.)

The average deaths from this disease in each month, . . . . . 230.3

The average deaths from this disease in each week, . . . . . 53.1

The average deaths from this disease in each day, . . . . . 7.6

The number of deaths from consumption, of both sexes, for the past thirty years were as follows:

| YEARS.      | Males. | Females. | Total. | YEARS.      | Males. | Females. | Total. |
|-------------|--------|----------|--------|-------------|--------|----------|--------|
| 1861, . . . | 910    | 907      | 1,817  | 1876, . . . | 1,288  | 1,388    | 2,676  |
| 1862, . . . | 961    | 938      | 1,949  | 1877, . . . | 1,142  | 1,207    | 2,349  |
| 1863, . . . | 966    | 989      | 1,955  | 1878, . . . | 1,154  | 1,337    | 2,491  |
| 1864, . . . | 1,087  | 1,002    | 1,289  | 1879, . . . | 1,233  | 1,248    | 2,481  |
| 1865, . . . | 1,020  | 1,006    | 2,026  | 1880, . . . | 1,325  | 1,367    | 2,692  |
| 1866, . . . | 994    | 950      | 1,944  | 1881, . . . | 1,358  | 1,410    | 2,768  |
| 1867, . . . | 942    | 1,005    | 1,947  | 1882, . . . | 1,382  | 1,427    | 2,809  |
| 1868, . . . | 1,000  | 995      | 1,995  | 1883, . . . | 1,343  | 1,455    | 2,798  |
| 1869, . . . | 982    | 993      | 1,975  | 1884, . . . | 1,395  | 1,406    | 2,801  |
| 1870, . . . | 1,118  | 1,990    | 2,308  | 1885, . . . | 1,346  | 1,475    | 2,821  |
| 1871, . . . | 1,099  | 1,138    | 2,337  | 1886, . . . | 1,468  | 1,366    | 2,834  |
| 1872, . . . | 1,167  | 1,163    | 2,330  | 1887, . . . | 1,437  | 1,363    | 2,800  |
| 1873, . . . | 1,093  | 1,198    | 2,291  | 1888, . . . | 1,404  | 1,291    | 2,695  |
| 1874, . . . | 1,133  | 1,171    | 2,304  | 1889, . . . | 1,297  | 1,235    | 2,532  |
| 1875, . . . | 1,185  | 1,174    | 2,359  | 1890, . . . | 1,457  | 1,307    | 2,764  |

*Cholera Infantum*.—The number of deaths so reported amounted to nine hundred and eighteen (918), an increase of eighty (80) over the previous year.

*Diphtheria*.—The number of deaths from this cause amounted to five hundred and twenty-eight (528), an increase of one hundred and fifty-three (153) over the previous year.

| YEARS. | Male adults. | Female adults. | Male children. | Female children. | DEATHS IN EACH QUARTER. |     |     |      |        |
|--------|--------------|----------------|----------------|------------------|-------------------------|-----|-----|------|--------|
|        |              |                |                |                  | 1st.                    | 2d. | 3d. | 4th. | Total. |
| 1868,  | 2            | 3              | 51             | 63               | 26                      | 24  | 17  | 52   | 119    |
| 1869,  | 3            | 5              | 75             | 99               | 42                      | 48  | 37  | 55   | 182    |
| 1870,  | 4            | 4              | 68             | 96               | 33                      | 25  | 31  | 83   | 172    |
| 1871,  | 3            | 3              | 71             | 68               | 48                      | 32  | 29  | 36   | 145    |
| 1872,  | 5            | 5              | 61             | 79               | 52                      | 28  | 25  | 45   | 150    |
| 1873,  | 1            | 2              | 56             | 51               | 45                      | 25  | 17  | 23   | 110    |
| 1874,  | 1            | 4              | 80             | 94               | 30                      | 28  | 20  | 101  | 179    |
| 1875,  | 6            | 7              | 314            | 325              | 116                     | 158 | 142 | 236  | 652    |
| 1876,  | 10           | 8              | 330            | 360              | 219                     | 192 | 103 | 194  | 708    |
| 1877,  | 6            | 7              | 182            | 263              | 120                     | 97  | 84  | 157  | 458    |
| 1878,  | 6            | 11             | 218            | 229              | 135                     | 81  | 90  | 158  | 464    |
| 1879,  | 6            | 5              | 141            | 169              | 130                     | 57  | 46  | 88   | 321    |
| 1880,  | 3            | 6              | 151            | 163              | 99                      | 72  | 51  | 101  | 323    |
| 1881,  | 3            | 8              | 214            | 232              | 84                      | 83  | 100 | 190  | 457    |
| 1882,  | 5            | 8              | 442            | 478              | 187                     | 162 | 203 | 381  | 933    |
| 1883,  | 1            | 9              | 511            | 485              | 267                     | 218 | 230 | 291  | 1,206  |
| 1884,  | 5            | 6              | 330            | 339              | 196                     | 112 | 114 | 258  | 680    |
| 1885,  | 3            | 10             | 282            | 305              | 204                     | 120 | 111 | 165  | 600    |
| 1886,  | 6            | 4              | 159            | 242              | 136                     | 84  | 91  | 100  | 411    |
| 1887,  | 5            | 5              | 192            | 214              | 67                      | 88  | 94  | 167  | 416    |
| 1888,  | 6            | 8              | 166            | 170              | 108                     | 72  | 52  | 118  | 350    |
| 1889,  | 3            | 3              | 199            | 170              | 100                     | 85  | 62  | 128  | 375    |
| 1890,  | 5            | 6              | 247            | 270              | 155                     | 95  | 86  | 192  | 528    |

*Scarlet Fever*.—The number of deaths from this cause amounted to one hundred and eighty-nine (189), a decrease from the previous year of one hundred and nine (109).

The deaths in each month amounted to:

|           |    |            |    |
|-----------|----|------------|----|
| January,  | 14 | July,      | 10 |
| February, | 8  | August,    | 11 |
| March,    | 5  | September, | 12 |
| April,    | 15 | October,   | 22 |
| May,      | 20 | November,  | 25 |
| June,     | 12 | December,  | 35 |

*Typhoid Fever*.—The number of deaths from this cause amounted to six hundred and sixty-six (666), a decrease of seventy (70) from the previous year.

*Hydrophobia*.—The following table shows the deaths from this cause since 1860.

|                 |   |                 |   |
|-----------------|---|-----------------|---|
| 1860, . . . . . | 0 | 1876, . . . . . | 4 |
| 1861, . . . . . | 1 | 1877, . . . . . | 4 |
| 1862, . . . . . | 4 | 1878, . . . . . | 2 |
| 1863, . . . . . | 6 | 1879, . . . . . | 3 |
| 1864, . . . . . | 3 | 1880, . . . . . | 1 |
| 1865, . . . . . | 2 | 1881, . . . . . | 5 |
| 1866, . . . . . | 2 | 1882, . . . . . | 2 |
| 1867, . . . . . | 2 | 1883, . . . . . | 3 |
| 1868, . . . . . | 0 | 1884, . . . . . | 0 |
| 1869, . . . . . | 7 | 1885, . . . . . | 0 |
| 1870, . . . . . | 1 | 1886, . . . . . | 0 |
| 1871, . . . . . | 1 | 1887, . . . . . | 0 |
| 1872, . . . . . | 1 | 1888, . . . . . | 0 |
| 1873, . . . . . | 1 | 1889, . . . . . | 3 |
| 1874, . . . . . | 3 | 1890, . . . . . | 2 |
| 1875, . . . . . | 2 |                 |   |

*Inflammation of Lungs.*—The total number of deaths from this cause amounted to two thousand and fifteen (2,015), an increase of four hundred and thirty-three (433).

*Influenza.*—During the epidemic of this disease that prevailed during the month of January, one hundred and forty-seven (147) deaths were attributed to this cause.

*Old Age.*—The number of deaths under this heading amounted to eight hundred and seventeen (817).

*Poisoning.*—The number of deaths from this cause amounted to thirty-four (34), as follows:

|                          |   |                                |    |
|--------------------------|---|--------------------------------|----|
| Poisoning, . . . . .     | 1 | Corrosive sublimate, . . . . . | 2  |
| Arsenic, . . . . .       | 5 | Cyanide of potash, . . . . .   | 1  |
| Ammonia, . . . . .       | 1 | Lead, . . . . .                | 3  |
| Carbolic acid, . . . . . | 1 | Opium, . . . . .               | 15 |
| Chloral, . . . . .       | 4 | Stramonium, . . . . .          | 1  |

*Suicide.*—The number of deaths from suicide amounted to eighty (80), a decrease of twenty-four (24) from the previous year. Of these, seventy-seven (77) were adults and three (3) minors; sixty (60) were males, and twenty (20) females; of the latter, three (3) were between fifteen and twenty years of age. The following table gives the means employed:

|                                        |    |                          |    |
|----------------------------------------|----|--------------------------|----|
| Aconite, . . . . .                     | 1  | Laudanum, . . . . .      | 4  |
| Arsenic, . . . . .                     | 2  | Oxalic acid, . . . . .   | 1  |
| Carbolic acid, . . . . .               | 2  | Paris green, . . . . .   | 1  |
| Coal gas, . . . . .                    | 2  | Poison, . . . . .        | 4  |
| Corrosive sublimate, . . . . .         | 1  | Prussic acid, . . . . .  | 1  |
| Cutting throat, . . . . .              | 6  | Rough on rats, . . . . . | 1  |
| Drowning, . . . . .                    | 1  | Shooting, . . . . .      | 26 |
| Hanging, . . . . .                     | 21 | Strangulation, . . . . . | 1  |
| Jumping from window, . . . . .         | 1  | Strychnine, . . . . .    | 2  |
| Jumping from railroad train, . . . . . | 1  | Wounds, . . . . .        | 1  |

| 1889.            |       |       |       |           | 1890  |       |       |           |
|------------------|-------|-------|-------|-----------|-------|-------|-------|-----------|
| Under<br>1 year, |       | Being | 25.66 | Per cent. | 5,287 | Being | 24.33 | Per cent. |
| 1 to 2           | 5,268 | "     | 6.27  | "         | 1,305 | "     | 6.00  | "         |
| 2 to 5           | 1,287 | "     | 5.83  | "         | 1,320 | "     | 6.07  | "         |
| 5 to 10          | 1,197 | "     | 3.23  | "         | 654   | "     | 3.00  | "         |
| 10 to 15         | 663   | "     | 1.49  | "         | 322   | "     | 1.48  | "         |
| 15 to 20         | 307   | "     | 2.99  | "         | 587   | "     | 2.71  | "         |
| 20 to 30         | 613   | "     | 9.38  | "         | 2,095 | "     | 9.65  | "         |
| 30 to 40         | 1,927 | "     | 8.88  | "         | 2,018 | "     | 9.29  | "         |
| 40 to 50         | 1,824 | "     | 8.15  | "         | 1,854 | "     | 8.53  | "         |
| 50 to 60         | 1,673 | "     | 7.60  | "         | 1,717 | "     | 7.91  | "         |
| 60 to 70         | 1,561 | "     | 8.69  | "         | 1,953 | "     | 8.98  | "         |
| 70 to 80         | 1,786 | "     | 7.26  | "         | 1,604 | "     | 7.38  | "         |
| 80 to 90         | 1,491 | "     | 3.98  | "         | 850   | "     | 3.91  | "         |
| 90 to 100        | 817   | "     | .56   | "         | 158   | "     | .73   | "         |
| 100 to 110       | 116   | "     | .03   | "         | 8     | "     | .03   | "         |
| 110 to 120       | 6     | "     |       |           |       |       |       |           |

# 10—ANNUAL REPORT OF THE SECRETARY OF THE BOARD OF HEALTH OF THE CITY OF SCRANTON.

Made to the State Board of Health of Pennsylvania, for the year beginning January 1, 1890, and ending December 31, 1890.

1. The name and address of each member of the board is

| NAME.                                   | Postoffice address.          |
|-----------------------------------------|------------------------------|
| Samuel Edgar, Secretary, . . . . .      | 317 Spruce street, Scranton. |
| Hon. E. H. Ripple, Chairman, . . . . .  | 513 Webster avenue, “        |
| W. A. Paine, M. D., Member, . . . . .   | 149 N. Main street, “        |
| J. K. Bentley, M. D., Member, . . . . . | 1713 Clinch avenue, “        |
| Henry Zeigler, Member, . . . . .        | 505 Cedar avenue, “          |
| Michael J. Kelley, Member, . . . . .    | 1031 Capouse avenue, “       |
| W. E. Allen, Health Officer, . . . . .  | 208 Wyoming ave., “          |

2. Twelve regular monthly and seven special meeting have been held during the year.

3. No improvements or changes have been made as regards water supply, drainage and sewerage, or in the method employed in disposing of excreta.

4. Two hundred and thirty-eight nuisances have been reported. About all that were reported have been removed.

• 5. Communicable diseases :

| NAME OF DISEASE.         | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|--------------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . . . .     |               |                |                   |                         |                                               |
| Diphtheria. . . . .      | 131           | 71             |                   |                         |                                               |
| Scarlet fever, . . . . . | 124           | 15             |                   |                         |                                               |
| Typhoid fever, . . . . . | 57            | 18             |                   |                         |                                               |

6. These diseases are reported to the board by the physicians in attendance in accordance with the law, ordinance or regulation requiring such reports.

7. They are recorded. Notice sent to the superintendent of the schools, and a placard placed upon the house by an officer.

8. Houses in which cases of small-pox, diphtheria and scarlet fever occurred were placarded.

9. The diseases more than usually prevalent during the year were measles. Two hundred and forty-two cases reported. Fourteen deaths from the same.

10. Nothing to communicate.

11. Schools. No special cases have come under observation in which unhealthy conditions existed.

12. No particularly unhealthy localities.



13. We suggest for improving the sanitary condition a cremator for disposing of our garbage and night soil. Also more sewers.

14. Accidents: Burning, 5; drowning, 5.

15. Nothing regarding any cases of disease which appeared to have been caused by polluted water, cesspool or sewer gas, defective ventilation, lead, arsenical or other forms of poisoning.

16. No instances of food adulteration, or injurious effects from it.

17. Diseases of animals: One case glandered horse.

18. The same rules that were adopted under the law of 1887, were re-adopted under 1889, a copy of which was sent to State Secretary Benj. Lee.

19. Have investigated the best means to dispose of the city's garbage and night soil, and have determined that cremation was the best, and have requested the councils for an appropriation for a cremator.

20. Nothing to suggest.

21. The health officer receives \$800 per annum, paid monthly; secretary, \$500 per annum, paid monthly; food and milk inspector, \$75 per month, paid monthly; sanitary policeman, \$75 per month, paid monthly.

SAMUEL EDGAR,  
Secretary.

March 21, 1891.

# 11—ANNUAL REPORT OF THE SECRETARY OF THE BOARD OF HEALTH OF THE CITY OF TITUSVILLE.

Made to the State Board of Health of Pennsylvania, for the year beginning January 1, 1890, and ending December 31, 1890.

1. The name and address of each member of the board is

| NAME.                                     | Postoffice address. |
|-------------------------------------------|---------------------|
| Thos. L. Hobart, Secretary, . . . . .     | Titusville, Pa.     |
| Dr. George W. Barr, Chairman, . . . . .   | " "                 |
| Bernard Abel, Member, . . . . .           | " "                 |
| Charles L. Gibbs, Member, . . . . .       | " "                 |
| Dr. Wm. Varian, Member, . . . . .         | " "                 |
| Daniel McGrath, Health Officer, . . . . . | " "                 |

2. Five meetings have been held by the board during the year.

3. The watersupply and sewers are extended every year.

4. Twenty nuisances have been reported. Twenty have been removed. Nothing unusual.

## 5. Communicable diseases.

| NAME OF DISEASE.  | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|-------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . .  |               |                |                   |                         |                                               |
| Diphtheria, . . . | 4             | none           |                   | 4                       | 3                                             |
| Scarlet fever, .  | 85            | none           |                   | 71                      | 71                                            |
| Typhoid fever, .  |               |                |                   |                         |                                               |

6. These diseases are reported by the physicians in attendance in accordance with the ordinance or regulation requiring such reports.

7. The health officer placards the building ; children not allowed to attend school from the family.

8. Houses in which cases of small-pox, diphtheria and scarlet fever occurred were always placarded.

9. The diseases more than usually prevalent during the year were, 4 cases diphtheria, 1 measles, 85 scarlet fever, 1 cerebro-spinal meningitis, 4 whooping cough, 6 cholera infantum, 1 pneumonia, 2 brain fever, 4 convulsions.

10. Scarlet fever was of a mild type prevailed largely in March, April and May ; Children not allowed to attend public funerals ; funerals confined to relatives and a few neighbors. Heard of no cases spread from funerals.

11. Schools. No special cases have come under observation in which unhealthy conditions existed.

12. There are no particularly unhealthy localities.

13. Nothing to suggest for improving the sanitary condition.

14. No accidents.

15. No cases of disease which appeared to have been caused by polluted water cesspool or sewer gas, defective ventilation, lead, arsenical or other forms of poisoning.

16. No instances of food adulteration, or injurious effects from it.

17. No diseases of animals.

18. No by-laws adopted in 1890.

19. Nothing of consequence done by the board during the year.

20. Our board think there should be some law authorizing them to employ a physician, when a contagious disease is reported, and it is doubtful whether it is as reported.

21. Secretary receives, per annum, \$130 ; health officer per annum, 75 ; no other salaries.

THOS. L. HOBART, *Secretary*.

March 25, 1891.

# 12—ANNUAL REPORT OF THE HEALTH OFFICER OF THE BOARD OF HEALTH OF THE BOROUGH OF WELLSBORO', PA.

Made to the State Board of Health of Pennsylvania, for the year beginning January 1, 1890, and ending December 31, 1890.

1. The name and address of each member of the board is

| NAME.                                     | Postoffice address. |
|-------------------------------------------|---------------------|
| U. L. Klock, Member, . . . . .            | Wellsboro', Pa.     |
| George Derby, Member, . . . . .           | " "                 |
| Dr. C. W. Webb, Health Officer, . . . . . | " "                 |

2. Four meetings have been held by the board during the year ?

3. One thousand feet additional sewer have been put in.

4. Nuisances: Several minor ones have been reported. All have been removed.

5. Communicable diseases :

| NAME OF DISEASE. | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . . | 0             |                |                   |                         |                                               |
| Diphtheria, . .  | 125           | 27             |                   | *40                     |                                               |
| Scarlet fever, . | 1             | 0              | 1                 | 1                       | 1                                             |
| Typhoid fever, . | 1             | 0              | 1                 | 1                       | 1                                             |

6. These diseases are reported to the board by the physicians in attendance in accordance with the law, ordinance or regulation requiring such reports.

7. Only active measures have been taken in diphtheria, which cases have been quarantined and houses disinfected.

8. Houses in which cases of diphtheria occurred were placarded.

9. Diphtheria was more than usually prevalent during the year.

10. Diphtheria broke out in five houses in one week, January 15, 1890, in four different parts of town. The cause of infection obscure.

11. Schools. One case not reported as diphtheria, out of school only a few days, returned, told the teacher he came near having diphtheria, two nearest pupils to him contracted diphtheria, one died, the other had a mild form, but gave disease to brother and two sisters, one of whom died in four days.

12. No particularly unhealthy localities ?

13. No suggestion improving the sanitary condition.

14. Accidents. Three deaths from accident.

15. Nothing to communicate.

16. No instances of food adulteration.

17. No serious diseases of animals.

18. No by-laws were adopted in 1890 ?

\* Successive from January 15th to November 17th about.

19. No other work of interest has been done by the board during the year.  
 20. Think the physicians should be made to be prompt in reporting cases.  
 21. The health officer receives \$50 a year, which for coming year has been cut down to \$25.

C. W. WEBB,  
*Wellsboro', Pa.*

*March 20, 1891.*

### 13—ANNUAL REPORT OF THE SECRETARY OF THE BOARD OF HEALTH OF THE CITY OF WILLIAMSPORT, PENNA.,

Made to the State Board of Health of Pennsylvania, for the term beginning August 6, 1890, and ending December 31, 1890.

1. The name and address of each member of the board is

| NAME.                                        | Postoffice address.         |
|----------------------------------------------|-----------------------------|
| J. J. Galbraith, Secretary, . . . . .        | No. 112 West Fourth street. |
| J. K. Crawford, Chairman, . . . . .          | Postoffice.                 |
| C. W. Youngman, M. D., Member, . . . . .     | No. 342 Pine street.        |
| J. H. McMim, Member, . . . . .               | No. 425 Locust street.      |
| D. T. Mahaffey, Member, . . . . .            | No. 928 West Fourth street. |
| H. H. Fessler, M. D., Member, . . . . .      | Newberry, box 5.            |
| A. Richter, M. D., Health Officer, . . . . . | No. 436 Market street.      |

2. Monthly meetings have been held by the boards during the year.  
 3. No improvements or changes been made as regards water supply, drainage and sewerage, or in the methods employed in disposing of excreta.  
 4. No report.  
 5. Communicable diseases :

| NAME OF DISEASE. | No. of cases. | No. of deaths. | No. of outbreaks. | No. of houses infected. | No. of outbreaks confined to the first house. |
|------------------|---------------|----------------|-------------------|-------------------------|-----------------------------------------------|
| Small-pox, . . . | not kno'n     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |
| Diphtheria, . .  | not kno'n     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |
| Scarlet fever, . | not kno'n     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |
| Typhoid fever, . | not kno'n     | . . . . .      | . . . . .         | . . . . .               | . . . . .                                     |

In no cases of infectious diseases has there been any spreading from house to house.

6. Some few cases are reported, but not all.
7. When cases of communicable diseases have been reported, the health officer inspects the locality and gives directions when required.
8. No houses in which cases of small-pox, diphtheria and scarlet fever occurred were placarded.
9. The diseases more than usually prevalent during the year were, in summer, diarrhoeal diseases of children, and in winter pneumonia.
10. The annual report of diseases in Williamsport has shown nothing of an epidemic whatever, not even influenza; whatever appeared was strictly sporadic.
11. Schools. No special cases have come under observation in which unhealthy conditions existed.
12. No particularly unhealthy localities.
13. Nothing to suggest for improving the sanitary condition.
14. No accidents.
15. Nothing to communicate.
16. No instances of food adulteration, or injurious effects from it.
17. No diseases of animals.
18. By-laws were adopted by the board in 1890.
19. No other work of interest has been done by the board during the year.
20. Nothing to suggest.
21. The cleaning of privies has paid to the board, or rather into the treasury of our city, five dollars and twenty-five cents. The secretary receives ten dollars per month, the health officer seventy dollars per month.

J. J. GALBRAITH, *Secretary*.

*April 8, 1891.*



## APPENDIX D.

METEOROLOGICAL OBSERVATIONS — PENNSYLVANIA  
STATE WEATHER SERVICE.

## ABSTRACT FROM MONTHLY WEATHER REVIEW.

For January, 1891.

(Prepared under the direction of the committee on meteorology of the Franklin Institute.)

*Temperature.*

The mean temperature of fifty-four stations for January, 1891, was  $30^{\circ}.6$ , which is over  $4^{\circ}.0$  above the normal, and  $7^{\circ}.1$  below the corresponding month of 1890.

The mean of the daily maxima and minima temperatures  $37^{\circ}.7$  and  $23^{\circ}.3$  give an average daily range of  $14^{\circ}.4$ , and a monthly mean of  $30^{\circ}.5$ .

Highest monthly mean,  $36^{\circ}.4$  at Philadelphia.

Lowest monthly mean,  $23^{\circ}.8$  at Eagle's Mere.

Highest temperature recorded during the month,  $64^{\circ}.0$  on the 29th at Uniontown.

Lowest temperature, minus  $4^{\circ}.0$  on the 4th at Eagle's Mere and Lewisburg, on the 8th at Columbus, and on the 9th at Wellsboro'.

Greatest local monthly range,  $20^{\circ}.2$  at Lancaster.

Least local monthly range,  $10^{\circ}.1$  at Pittsburgh and Grampian Hills.

Greatest daily range,  $43^{\circ}$  at Smethport on the 25th.

Least daily range,  $2^{\circ}$  at Grampian Hills on the 11th.

From January 1, 1891, to January 31, 1891, the excess in temperature at Philadelphia was  $122^{\circ}$ , at Erie  $137^{\circ}$ , and at Pittsburgh  $164^{\circ}$ .

*Barometer.*

The mean pressure for the month, 30.06, is about .04 below the normal. At the United States signal service stations, the highest observed was 30.67, at Pittsburgh on the 8th, and the lowest, 29.22, at Philadelphia on the 12th.

*Precipitation.*

The average precipitation, 3.64 inches for the month, is nearly normal.

The largest totals in inches (including melted snow) were Girardville, 8.74; Coopersburg, 7.29, and Pottstown, 7.

The least were Greenville, 1.22; Chambersburg, 2.27; Altoona, 2.35, and Erie, 2.43.

The snowfall average for the state was about 9 inches.

The largest totals in inches were Somerset, 40.5; Blue Knob, 33.5; Dyberry, 20; Eagle's Mere, 19, and Charlesville, 15.

Only elevated districts report snow on the ground at the end of the month.

*Wind and Weather.*

The prevailing wind was from the northwest. The wind and snow storm of the 25th caused great damage to telegraph and telephone wires.

Average number: Rainy days, 12; clear days, 6; fair days, 10; cloudy days, 15.



| Fulton, . . . . .              | 875   | . . . . . | . . . . . | . . . . . | 51   | 7  | 5  | 11 | 39.2 | 24   | 15.2 | 30   | 19 | 4  | 13 |
|--------------------------------|-------|-----------|-----------|-----------|------|----|----|----|------|------|------|------|----|----|----|
| Huntingdon, *                  | 650   | . . . . . | . . . . . | . . . . . | 29.3 | 31 | 3  | 4  | 38.5 | 20.1 | 18.5 | 32   | 9  | 2  | 13 |
| Petersburg, . . . . .          | 700   | . . . . . | . . . . . | . . . . . | 30.6 | 56 | 6  |    | 27   | 26.5 | 10.1 | 32   | 27 | 1  | 23 |
| Indiana—                       |       |           |           |           |      |    |    |    |      |      |      |      |    |    |    |
| State Normal School.           | 1,350 | 30.027    | 30.570    | 29.336    | 31   | 54 | 3  | 9  | 36.7 | 23   | 13.7 | 37   | 9  | 4  | 11 |
| Lancaster (26 days)—           |       |           |           |           |      |    |    |    |      |      |      |      |    |    |    |
| Franklin and Marshall College. | 413   | 30.175    | 30.579    | 29.202    | 33.9 | 57 | 23 | 6  | 43.3 | 23.2 | 20.3 | 41.5 | 6  | 12 | 29 |
| New Castle, . . . . .          | 322   | . . . . . | . . . . . | . . . . . | 33.3 | 55 | 23 | 5  | 38.1 | 24   | 14.1 | 28   | 27 | 3  | 2  |
| McGowan, . . . . .             | 47    | . . . . . | . . . . . | . . . . . |      |    |    |    |      |      |      |      |    |    |    |
| Coversburg, . . . . .          | 530   | . . . . . | . . . . . | . . . . . | 32.1 | 51 | 12 | 4  | 42.2 | 24.6 | 17.6 | 28   | 10 | 8  | 29 |
| Drifton—                       |       |           |           |           |      |    |    |    |      |      |      |      |    |    |    |
| Drifton Hospital.              | 1,655 | . . . . . | . . . . . | . . . . . |      |    |    |    |      |      |      |      |    |    |    |
| Wilkes-Barre, . . . . .        | 575   | . . . . . | . . . . . | . . . . . | 31.8 | 54 | 22 | 4  | 39.6 | 24.1 | 15.5 | 30   | 3  | 5  | 5  |
| Nisbet, . . . . .              | 550   | . . . . . | . . . . . | . . . . . | 28.9 | 47 | 27 | 2  | 35.2 | 18.2 | 17   | 43   | 15 | 6  | 18 |
| Smethport, . . . . .           | 1,500 | . . . . . | . . . . . | . . . . . | 27.2 | 47 |    |    |      |      |      |      |    |    |    |
| Greenville—                    |       |           |           |           |      |    |    |    |      |      |      |      |    |    |    |
| Thiel College.                 | 1,000 | 30.032    | 30.758    | 29.176    | 30   | 49 | 2  | 8  | 36.7 | 23.4 | 13.3 | 29   | 15 | 4  | 18 |
| Pottstown, . . . . .           | 330   | . . . . . | . . . . . | . . . . . | 33.9 | 50 | 22 | 1  | 40.5 | 27.3 | 13.2 | 25   | 26 | 5  | 13 |
| Bethlehem, . . . . .           | 360   | . . . . . | . . . . . | . . . . . |      |    | 22 | 4  |      |      |      |      |    |    |    |
| Philadelphia—                  |       |           |           |           |      |    |    |    |      |      |      |      |    |    |    |
| Signal Office.                 | 117   | 30.074    | 30.550    | 29.220    | 36.4 | 56 | 22 | 17 | 43.2 | 29.7 | 13.5 | 20   | 10 | 7  | 13 |
| Philadelphia, *                | 65    | 30.032    | 30.560    | 29.210    | 36.2 | 55 | 22 | 16 | 43.1 | 29.3 | 13.8 | 20   | 3  | 7  | 19 |
| Schuykill, . . . . .           | 1,000 | 30.033    | 30.488    | 29.429    | 30.4 | 53 | 22 | 10 | 38.5 | 23.5 | 15   | 24   | 27 | 6  | 13 |
| Girardville, . . . . .         | 445   | . . . . . | . . . . . | . . . . . | 30.1 | 50 | 31 |    | 38   | 22.2 | 15.8 |      |    |    |    |
| Sellingrove, . . . . .         | 2,250 | . . . . . | . . . . . | . . . . . | 29.9 | 54 | 2  | 8  | 35.3 | 20.3 | 15   |      | 13 | 4  | 18 |
| Somerset, . . . . .            | 2,060 | 30.144    | 30.589    | 29.491    | 23.8 | 44 | 22 | 3  | 30.2 | 18.6 | 11.6 | 28   | 13 | 6  | 20 |
| Sullivan, . . . . .            | 1,327 | 30.046    | 30.652    | 29.283    | 25.2 | 48 | 27 | 4  | 33.4 | 18.3 | 14.3 | 20   | 12 | 8  | 31 |
| Eagle's Mere, . . . . .        | 1,450 | . . . . . | . . . . . | . . . . . | 26.9 | 47 | 27 | 4  | 32.9 | 19.3 | 14.3 | 20   | 27 | 8  | 31 |
| Wellsville, . . . . .          | 1,450 | . . . . . | . . . . . | . . . . . | 26.7 | 47 | 23 | 8  | 33.8 | 19.5 | 14.3 | 38   | 9  | 1  | 30 |
| Columbus, . . . . .            | 1,450 | . . . . . | . . . . . | . . . . . |      |    |    |    |      |      |      |      |    |    |    |
| Canonsburg, . . . . .          | 1,000 | . . . . . | . . . . . | . . . . . | 24.9 | 47 | 2  | 4  | 33.2 | 15.7 | 17.5 | 39   | 10 | 4  | 29 |
| Washington, . . . . .          | 1,000 | . . . . . | . . . . . | . . . . . | 26.4 | 49 | 2  | 0  | 34.7 | 18   | 16.7 | 40   | 26 | 5  | 13 |
| Donesdale, . . . . .           | 1,000 | . . . . . | . . . . . | . . . . . | 30.9 | 58 | 28 | 7  | 37.7 | 22.6 | 15.1 | 32   | 9  | 5  | 18 |
| Ligonier (28 days), . . . . .  | 1,750 | . . . . . | . . . . . | . . . . . | 28.9 | 47 | 2  | 4  | 37.7 | 22.6 | 15.1 | 32   | 9  | 5  | 18 |
| South Eaton, . . . . .         | 1,660 | . . . . . | . . . . . | . . . . . | 35.8 | 54 | 22 | 8  | 37.7 | 22.6 | 15.1 | 32   | 9  | 5  | 18 |
| Wyoming, *                     | 385   | . . . . . | . . . . . | . . . . . | 32   | 54 | 22 | 4  | 41   | 23   | 18   | 25   | 10 | 6  | 19 |
| York, *                        |       | . . . . . | . . . . . | . . . . . |      |    |    |    |      |      |      |      |    |    |    |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.     | STATION.                         | PRECIPITATION |            |                    |                              |                                          |                           |        | NUMBER OF DAYS |         |         | WIND.   |         |                       |
|-------------|----------------------------------|---------------|------------|--------------------|------------------------------|------------------------------------------|---------------------------|--------|----------------|---------|---------|---------|---------|-----------------------|
|             |                                  | Total inches. | Dew point. | Relative humidity. | Total snowfall during month. | Depth of snow on ground at end of month. | Number of days rain-fall. | Clear. | Fair.          | Cloudy. | 7 a. m. | 2 p. m. | 9 p. m. | PREVAILING DIRECTION. |
|             |                                  |               |            |                    |                              |                                          |                           |        |                |         |         |         |         |                       |
| Allegheny * | Pittsburgh.                      | 82.2          | 30         | 2.43               | 3.20                         | ..                                       | 17                        | 2      | 5              | 24      | W       | W       | W       |                       |
| Bradford.   | Charlesville.                    | 81            | 23.7       | 2.63               | 15                           | ..                                       | 9                         | 2      | 9              | 18      | SW      | SW      | SW      |                       |
| Blair.      | Altoona.                         | 74.4          | 28.5       | 2.35               | ..                           | ..                                       | ..                        | ..     | ..             | ..      | NW      | NW      | NW      |                       |
| Blair.      | Blue Knob.                       | ..            | ..         | ..                 | ..                           | ..                                       | ..                        | ..     | ..             | ..      | W       | W       | W       |                       |
| Blair.      | Holidaysburg.                    | 78.6          | 24.7       | 3.74               | 9                            | ..                                       | 16                        | 7      | 10             | 14      | W       | W       | W       |                       |
| Bradford.   | Wysex.                           | 80.5          | 23.6       | 3.72               | 12.55                        | 6                                        | 9                         | 5      | 6              | 20      | SW      | NW      | W       |                       |
| Bradford.   | Le Roy.                          | ..            | ..         | 4.63               | 13.05                        | 12                                       | 11                        | 4      | 10             | 17      | SW      | SW      | SW      |                       |
| Bucks.      | Forks of Neshaminy.              | ..            | ..         | 6.11               | ..                           | ..                                       | 11                        | 9      | 4              | 16      | N       | N       | N       |                       |
| Bucks.      | Quakertown.                      | 82.5          | 25.9       | 6.28               | 10                           | ..                                       | 11                        | 5      | 15             | 11      | NW      | NW      | NW      |                       |
| Camden.     | Conestoga.                       | 88.4          | 27         | 3.47               | 4.50                         | ..                                       | 21                        | 2      | 10             | 19      | S       | S       | S       |                       |
| Carbon.     | Emery.                           | ..            | ..         | 3.47               | 1                            | ..                                       | 9                         | 4      | 8              | 19      | NW      | NW      | W       |                       |
| Carbon.*    | March Chunk (27 days).           | ..            | ..         | 6.30               | ..                           | ..                                       | 7                         | 4      | 14             | 6       | NW      | NW      | NW      |                       |
| Centre.     | State College.                   | ..            | ..         | ..                 | ..                           | ..                                       | ..                        | ..     | ..             | ..      | W       | W       | W       |                       |
| Chester.    | Agricultural Experiment Station. | ..            | ..         | ..                 | ..                           | ..                                       | ..                        | ..     | ..             | ..      | W       | W       | W       |                       |
| Chester.    | West Chester.                    | 88.5          | 25.6       | 4.11               | 13.80                        | 4                                        | 14                        | 4      | 6              | 21      | W       | W       | NW      |                       |
| Chester.    | Coatesville.                     | 75            | 26         | 6.56               | 5.50                         | ..                                       | 12                        | 14     | 5              | 12      | NW      | NW      | NW      |                       |
| Chester.*   | Kennett Square.                  | ..            | ..         | 6.58               | ..                           | ..                                       | 11                        | 6      | 14             | 11      | W       | W       | W       |                       |
| Chester.    | Phoenixville.                    | ..            | ..         | 6.08               | 3                            | ..                                       | 10                        | 9      | 13             | 9       | NW      | NW      | NW      |                       |
| Chester.    | Westtown (23 days).              | 81.6          | 26.7       | 5.19               | 5.51                         | ..                                       | 12                        | 7      | 7              | 17      | NW      | NW      | NW      |                       |
| Clarion.    | Rimersburg.                      | ..            | ..         | 5.74               | 4                            | ..                                       | 6                         | 6      | 9              | 8       | W       | W       | W       |                       |
| Clarion.    | Clarion.                         | ..            | ..         | ..                 | 4.50                         | ..                                       | 19                        | 4      | 4              | 23      | W       | W       | W       |                       |
| Clearfield. | State Normal School.             | ..            | ..         | ..                 | ..                           | ..                                       | ..                        | ..     | ..             | ..      | ..      | ..      | ..      |                       |
| Columbia.   | Grampian Hills.                  | ..            | ..         | ..                 | ..                           | ..                                       | 11                        | 4      | 7              | 20      | W       | W       | W       |                       |
| Columbia.   | Lock Haven.                      | ..            | ..         | ..                 | ..                           | ..                                       | 12                        | 4      | 6              | 20      | W       | W       | W       |                       |
| Crawford.   | Cotawissa.                       | ..            | ..         | ..                 | ..                           | ..                                       | 11                        | 5      | 6              | 20      | W       | W       | W       |                       |
| Crawford.   | Meadville.                       | 87            | 24.7       | 3.24               | 18                           | ..                                       | 14                        | 1      | 7              | 23      | NW      | NW      | NW      |                       |
| Cumberland. | Carlisle.                        | 89            | 26         | 4.07               | 9.75                         | ..                                       | 14                        | 4      | 17             | 10      | W       | W       | W       |                       |
| Dauphin.*   | Harrisburg.                      | 79.7          | 26.2       | 4.73               | 6                            | ..                                       | 13                        | 5      | 15             | 11      | W       | W       | W       |                       |
| Delaware.   | Swarthmore.                      | ..            | ..         | ..                 | ..                           | ..                                       | ..                        | ..     | ..             | ..      | ..      | ..      | ..      |                       |
| Erie.*      | Erie.                            | 78            | 28         | 4.84               | 5                            | ..                                       | 9                         | ..     | 16             | 15      | SW      | NW      | NW      |                       |
| Erie.       | Uniontown.                       | 83            | 24         | 3.82               | ..                           | ..                                       | 18                        | 1      | 7              | 23      | SW      | SW      | SW      |                       |
| Franklin.   | Chambersburg                     | ..            | ..         | 3.41               | 2                            | ..                                       | 9                         | 5      | 11             | 15      | SW      | SW      | SW      |                       |
| Franklin.   | Wilson Female College.           | 90.5          | 27.1       | 2.27               | 5                            | ..                                       | 6                         | ..     | ..             | ..      | ..      | ..      | ..      |                       |



|                | F | 7 | 15 | 8 | 15 | 4.53 | 26 | 75.5 | McConnellsburg,<br>Penn. | W |
|----------------|---|---|----|---|----|------|----|------|--------------------------|---|
| Fulton,        | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | McConnellsburg,<br>Penn. | W |
| Huntingdon,    | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Huntingdon,<br>Pa.       | W |
| Huntington,    | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Huntington,<br>Ind.      | W |
| Indiana,       | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Indiana,<br>Ind.         | W |
| Lancaster,     | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Lancaster,<br>Pa.        | W |
| Lawrence,      | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Lawrence,<br>Kan.        | W |
| Lebanon,       | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Lebanon,<br>Ind.         | W |
| Lehigh,        | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Lehigh,<br>Pa.           | W |
| Luzerne,       | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Luzerne,<br>Pa.          | W |
| Luzerne,*      | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Luzerne,*<br>Pa.         | W |
| Lycoming,      | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Lycoming,<br>Pa.         | W |
| McKean,        | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | McKean,<br>Pa.           | W |
| Mercer,*       | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Mercer,*<br>Pa.          | W |
| Mifflin,       | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Mifflin,<br>Pa.          | W |
| Northampton,   | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Northampton,<br>Pa.      | W |
| Philadelphia,* | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Philadelphia,*<br>Pa.    | W |
| Philadelphia,  | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Philadelphia,<br>Pa.     | W |
| Schuylkill,    | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Schuylkill,<br>Pa.       | W |
| Snyder,        | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Snyder,<br>Pa.           | W |
| Somerset,      | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Somerset,<br>Pa.         | W |
| Sullivan,      | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Sullivan,<br>Pa.         | W |
| Tioga,*        | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Tioga,*<br>Pa.           | W |
| Warren,        | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Warren,<br>Pa.           | W |
| Washington,    | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Washington,<br>Pa.       | W |
| Wayne,         | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Wayne,<br>Pa.            | W |
| Westmoreland,  | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Westmoreland,<br>Pa.     | W |
| Wyoming,*      | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | Wyoming,*<br>Pa.         | W |
| York,*         | 1 | 1 | 1  | 1 | 1  | 1    | 1  | 1    | York,*<br>Pa.            | W |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

## PRECIPITATION FOR JANUARY, 1891.

|     | Altoona. | Bethlehem. | Blue Knob. | Brower's Lock. | Canonsburg. | Carlisle. | Catawissa. | Chambersburg. | Charlottesville. | Charlton. | Coatesville. | Columbus. | Coopersburg. | Doylesstown. | Drifton. | Dyberry. | Eagle's Mere. | Emporium. | Erie.* | Forks of Neshaunmy. | Frederick. | (Germantown. | (Harrisville. |
|-----|----------|------------|------------|----------------|-------------|-----------|------------|---------------|------------------|-----------|--------------|-----------|--------------|--------------|----------|----------|---------------|-----------|--------|---------------------|------------|--------------|---------------|
| 1.  | .17      | .02        | .16        | .06            | .22         | .06       | .06        | .06           | .28              | .20       | .38          | .05       | .17          | .59          | .13      | .18      | .15           | .45       | .13    | .18                 | .16        | .28          |               |
| 2.  | .08      | .02        | .54        | .35            | .21         | .07       | .07        | .07           | .55              | .33       | .86          | .72       | .02          | .59          | .32      | .19      | .32           | .32       | .19    | .49                 | .53        | .22          |               |
| 3.  | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .04       | .00          | .00          | .00      | .00      | .00           | .00       | .02    | .00                 | .00        | .00          |               |
| 4.  | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .05       | .00          | .04          | .00      | .04      | .22           | .00       | .02    | .00                 | .00        | .04          |               |
| 5.  | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .11           | .00       | .09    | .00                 | .00        | .00          |               |
| 6.  | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 7.  | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 8.  | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 9.  | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 10. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 11. | .20      | .11        | .05        | .96            | .90         | .07       | .94        | .60           | 1.47             | .47       | 1.42         | .98       | .00          | .60          | .73      | .90      | .05           | .90       | .37    | 1.17                | .97        | 1.72         |               |
| 12. | .43      | .36        | .30        | .30            | .18         | .00       | .00        | .00           | .08              | .08       | .05          | .05       | 1.20         | .28          | .21      | .10      | .10           | .21       | .24    | .24                 | .36        | .05          |               |
| 13. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 14. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 15. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 16. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 17. | .08      | .20        | .97        | .42            | .67         | .25       | .30        | .57           | .87              | .06       | .34          | .40       | .40          | .33          | .50      | .42      | .05           | .00       | .00    | .47                 | .82        | .68          |               |
| 18. | .55      | .55        | .29        | .29            | .55         | .30       | .00        | .00           | .06              | .06       | .06          | .00       | .34          | .00          | .00      | .00      | 1.13          | .00       | .61    | .83                 | .26        | .00          |               |
| 19. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 20. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 21. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 22. | .68      | .42        | 1.09       | .73            | 1.05        | .65       | .65        | .65           | .68              | 1.34      | .41          | .57       | 1.31         | .86          | .01      | .86      | 1.04          | .88       | .44    | 1.88                | .99        | .32          |               |
| 23. | .00      | .10        | .10        | .00            | .00         | .80       | .00        | .20           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .73           | .10       | .00    | .00                 | .00        | .10          |               |
| 24. | .00      | .30        | 1.34       | .62            | .44         | .20       | .00        | .00           | 1.60             | 1.60      | .66          | 1.77      | .00          | 1.17         | .00      | 1.17     | .00           | .00       | .80    | 1.16                | 1.30       | .00          |               |
| 25. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 26. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 27. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 28. | .00      | .00        | .00        | .00            | .00         | .00       | .00        | .00           | .00              | .00       | .00          | .00       | .00          | .00          | .00      | .00      | .00           | .00       | .00    | .00                 | .00        | .00          |               |
| 29. | .15      | .02        | .20        | .15            | .12         | .02       | .02        | .02           | .09              | .15       | .37          | .33       | .25          | .24          | .24      | .40      | .74           | .20       | .24    | .18                 | .01        | .32          |               |
| 30. | .00      | .01        | .00        | .00            | .00         | .02       | .46        | .50           | .21              | .10       | .02          | .05       | .02          | .00          | .00      | .03      | .18           | .81       | .06    | .08                 | .03        | .15          |               |
| 31. | 2.35     | 3.60       | 5.94       | 4.07           | 5.26        | 2.27      | 2.63       | 5.69          | 5.69             | 5.69      | 7.29         | 2.57      | 7.29         | 6.29         | 5.30     | 5.30     | 5.50          | 3.47      | 2.32   | 6.11                | 5.60       | 8.74         |               |

United States Signal Office.

## PRECIPITATION FOR JANUARY, 1891—Continued.

|    | Greenupville. | Jamburg. | Harttsburg.* | Hollidaysburg. | Honesdale. | Huntingdon. | Indiana. | Johnstown. | Kennett Square. | Lancaster. | Lansdale. | Le Roy. | Lewistown. | Ligonier. | Lock Haven. | Manch Chunk. | Meadville. | McConnellsburg. | New Castle. | Nisbet. | Ottsville. | Petersburg. |
|----|---------------|----------|--------------|----------------|------------|-------------|----------|------------|-----------------|------------|-----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|---------|------------|-------------|
| 1  | .12           | .15      | .18          | .27            | .20        |             | .25      | .00        | .04             | +          | .11       | .01     | .50        | 1.00      | .20         | .31          | .88        | .08             | .88         | .10     | .15        | .07         |
| 2  | .44           | .80      | .40          | .02            | .02        |             | .30      | .16        | .34             | +          | .18       | .10     | .10        | .46       | .20         | .74          | .20        | .06             | .05         | .20     | .59        | .09         |
| 3  | .01           |          |              |                |            |             |          | .02        |                 | +          |           | .01     |            |           |             |              |            |                 |             |         |            |             |
| 4  | .03           | .02      |              | .01            | .06        |             | .10      | .01        |                 | +          |           |         |            |           |             |              |            | .10             | .05         |         |            |             |
| 5  | .03           | .01      |              |                |            |             | .05      | .03        |                 |            |           |         |            |           |             |              |            | .05             |             |         |            |             |
| 6  |               |          |              |                |            |             | .01      |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 7  |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 8  |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 9  |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 10 | .80           | 1.40     | .92          | .05            | .58        | .18         | .60      | .01        | 1.08            | 1.32       | .44       | .38     | .03        | .50       | .82         | .70          | .68        | .30             |             | .80     | 1.70       | .92         |
| 11 | .03           | .41      | .16          | .22            | .03        |             | .20      | .35        | .88             | .11        | .55       | .30     | .02        | .47       | .33         | .33          | .12        | .12             | .49         | .20     | .45        |             |
| 12 | .08           |          |              |                | .03        |             | .50      |            |                 |            |           |         | .05        |           |             |              | .20        |                 | .02         |         |            |             |
| 13 |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 14 |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 15 |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 16 | .08           | .53      | .38          | .39            | .61        |             | .65      | .20        | .59             |            | .65       | .05     | .15        | .11       | .20         | .34          |            | .30             |             | .20     | .47        | .46         |
| 17 |               | .13      | .02          | .29            | .21        | 1.20        |          | .14        | .08             |            | .35       | 1.10    | .90        | .80       | .80         |              |            | 1.15            |             | .60     | .45        | 1.00        |
| 18 |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 19 |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 20 |               |          |              |                |            |             |          |            |                 |            |           |         |            |           |             |              |            |                 |             |         |            |             |
| 21 | .76           | 1.00     | 1.10         | .76            | .82        | .80         | .60      | .73        | 1.32            | 1.02       | 1.52      | 1.60    | .45        | 1.30      | .33         | 1.85         | .38        | 1.11            | .40         | .80     | 1.18       | .91         |
| 22 | .07           | .69      | .06          | .07            | .01        | .25         | .10      | .01        | 1.08            | .07        |           | .12     | .40        | .05       | .10         |              | .10        | .18             |             | .30     | 1.20       | .20         |
| 23 |               |          |              |                |            |             |          | .17        |                 |            |           |         |            |           | .05         | 1.03         | .05        | .48             |             |         |            |             |
| 24 |               |          |              |                |            |             |          |            |                 |            |           |         |            |           | .05         |              |            |                 |             |         |            |             |
| 25 | .03           |          |              | .03            | .02        |             |          | .05        |                 |            |           |         | .10        |           | .05         |              |            |                 |             | .10     |            |             |
| 26 |               |          |              |                |            |             | .80      | .24        | .08             |            |           |         |            |           | .05         |              |            | .07             | .00         |         |            |             |
| 27 | .03           | .03      | .02          | .10            | .20        |             | .30      | .31        | .37             |            | .25       | .17     | .80        |           | .05         |              | .35        | .23             | .24         | .20     | .20        | .33         |
| 28 | .74           | .16      | .16          | .23            | .19        |             | .30      | .31        | .08             | .37        |           | .25     |            |           | .05         |              | .14        |                 | .24         | .20     | .05        | .13         |
| 29 |               | .04      | .04          | .10            | .14        | .50         | .50      | .22        | .60             | .30        | .11       | .25     | .25        | +         | .05         |              | .40        | .26             | .71         | .30     | .30        | .18         |
| 30 |               |          | .05          | .20            |            | .25         | .50      |            |                 |            |           |         |            | +         |             |              |            |                 |             |         |            |             |
| 31 | .40           | .20      |              |                |            |             |          |            |                 |            |           |         |            | +         | .05         |              |            |                 |             |         |            |             |
|    | 3.62          | 1.22     | 5.27         | 3.74           | 4.21       | 3.58        | 4.40     | 3.47       | 6.08            | 3.09       | 6.03      | 4.63    | 3.33       | 3.30      | 4.21        | 6.30         | 4.12       | 4.53            | 2.88        | 4.00    | 6.76       | 4.29        |

\* United States Signal Office.

† No record.

## PRECIPITATION FOR JANUARY, 1891—Continued.

|     | Philadelphia.* | Philadelphia. | Phoenixville. | Pittsburgh.* | Point Pleasant. | Pottstown. | Quakertown. | Reading. | Seisholtzville. | Selinsgrove. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellisboro'. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. |
|-----|----------------|---------------|---------------|--------------|-----------------|------------|-------------|----------|-----------------|--------------|-----------------|-----------|--------------|----------------|-------------|------------|--------------|---------------|-----------|---------------|--------|-------|
| 1.  | .15            | .15           | .22           | .15          | .12             | .85        | .28         | .19      | .28             | .            | .22             | .20       | .07          | .24            | .54         | .36        | 1.40         | .25           | .54       | .04           | .04    | .16   |
| 2.  | .45            | .42           | .56           | .16          | 1.02            | .50        | .65         | .38      | .66             | .            | .70             | 2.15      | .40          | .11            | .54         | .10        | 1.40         | .45           | .         | .32           | .      | .35   |
| 3.  | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .65       | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 4.  | .              | .             | .             | .01          | .               | .          | .           | .        | .               | .            | .               | .10       | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 5.  | .62            | .             | .             | .04          | .               | .          | .           | .        | .               | .            | .               | .12       | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 6.  | .06            | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 7.  | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 8.  | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 9.  | .              | .             | .             | .02          | .               | .          | .           | .        | .               | .            | .               | .         | .            | .01            | .           | .          | .65          | .             | .         | .             | .      | .     |
| 10. | .              | .             | .98           | .52          | .               | 1.85       | 1.12        | .90      | 1.61            | .            | 1.15            | .43       | .95          | .89            | .95         | .36        | 1.82         | 1.28          | 1.42      | .52           | 1.15   | .80   |
| 11. | .              | .             | .18           | .17          | 1.48            | .          | .32         | .28      | .63             | .            | .34             | .30       | .24          | .05            | .16         | .65        | .53          | .43           | .         | .21           | .      | .11   |
| 12. | .              | .             | .09           | .03          | .               | .          | .           | .        | .               | .            | .               | .15       | .            | .              | .           | .          | .15          | .             | .         | .             | .      | .     |
| 13. | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 14. | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 15. | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 16. | .              | .             | .69           | .69          | .74             | .80        | .85         | .50      | .64             | .            | .64             | .16       | .56          | .10            | .20         | .21        | .02          | 1.02          | +         | .30           | .74    | .21   |
| 17. | .29            | .28           | .29           | .29          | .22             | .          | .35         | .45      | .37             | .            | .39             | .31       | .36          | .35            | .30         | .          | .35          | .             | +         | 1.06          | .      | .63   |
| 18. | .39            | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | +         | .             | .      | .     |
| 19. | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | +         | .             | .      | .     |
| 20. | .              | .             | .             | .01          | .               | 1.14       | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | 80        | .             | .      | .49   |
| 21. | .98            | 1.27          | 1.12          | .54          | 1.40            | 1.50       | .           | 1.11     | 1.50            | .            | 1.42            | .32       | 1.65         | 1.00           | 1.34        | .76        | 1.44         | 1.43          | 1.27      | .88           | .52    | 1.05  |
| 22. | .              | .             | .             | .01          | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 23. | .              | .             | .             | .            | .               | .94        | .           | .91      | 1.11            | .            | .               | .         | .            | .              | .           | .          | .            | .             | 1.33      | 1.30          | 1.08   | .14   |
| 24. | .64            | 1.18          | .85           | .01          | 1.40            | 1.10       | .           | .        | .               | .            | .62             | .40       | .78          | .19            | .96         | .          | .            | .07           | .         | .             | .      | .80   |
| 25. | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .         | .            | .              | .           | .          | .            | .             | .         | .             | .      | .     |
| 26. | .              | .             | .             | .            | .               | .          | .           | .        | .               | .            | .               | .10       | .            | .04            | .           | .          | .            | .             | .         | .             | .      | .     |
| 27. | .              | .             | .01           | .15          | .               | .          | .05         | .01      | .               | .            | .01             | .10       | .08          | .03            | .           | .          | .            | .01           | .         | .18           | .19    | .02   |
| 28. | .              | .             | .22           | .12          | .26             | .30        | .29         | .19      | .28             | .            | .22             | .15       | .13          | .22            | .63         | .22        | .10          | .15           | .         | .             | .21    | .09   |
| 29. | .              | .             | .01           | .20          | .01             | .10        | .07         | .01      | .02             | .            | .02             | .20       | .05          | .12            | .09         | .22        | .05          | .02           | .         | .             | .      | .     |
| 30. | .07            | .07           | .04           | .20          | .01             | .          | .           | .01      | .02             | .            | .04             | .20       | .65          | .16            | .30         | .22        | .05          | .12           | .41       | .             | .24    | .63   |
| 31. | 3.65           | 5.18          | 5.19          | 2.47         | 6.33            | 7.00       | 6.26        | 5.15     | 7.00            | .            | 5.88            | 5.51      | 5.47         | 4.11           | 4.84        | 3.41       | 6.53         | 6.56          | 5.74      | 4.59          | 3.72   | 3.65  |

+ No record.

United States Signal Office.

For February, 1891.

*Temperature.*

The mean temperature of fifty-five stations for February, 1891, was  $34^{\circ}.9$ , which is nearly  $6^{\circ}.0$  above the normal, and  $2^{\circ}.2$  below the corresponding month of 1890.

The mean of the daily maxima and minima temperatures  $42^{\circ}.8$  and  $26^{\circ}.7$  give an average daily range of  $16^{\circ}.1$ , and a monthly mean of  $34^{\circ}.7$ .

Highest monthly mean,  $40^{\circ}.5$  at Philadelphia.

Lowest monthly mean,  $26^{\circ}.8$  at Eagle's Mere.

Highest temperature recorded during the month,  $70^{\circ}$  on the 18th at Philadelphia.

Lowest temperature, minus  $7^{\circ}$  on the 5th at Dyberry.

Greatest local monthly range,  $63^{\circ}$  at Somerset.

Least local monthly range,  $46^{\circ}$  at Kennett Square, Nisbet and Greenville.

Greatest daily range,  $43^{\circ}$  at Erie on the 5th.

Least daily range,  $2^{\circ}$  at State College and Grampian Hills on the 8th, Pottstown on the 7th, and Lock Haven on the 4th.

From January 1, 1891, to February 28, 1891, the excess in temperature at Philadelphia was  $244^{\circ}$ , at Erie  $274^{\circ}$ , and at Pittsburgh  $313^{\circ}$ .

The warmest days of the month were the 17th, 18th and 25th. The coldest, the 4th and 5th.

*Barometer.*

The mean pressure for the month, 30.07, is about .03 below the normal. At the United States signal service stations, the highest observed was 30.71, at Philadelphia, on the 15th, and the lowest, 29.25, at Erie, on the 25th.

*Precipitation.*

The average precipitation, 4.61 inches for the month, is slightly above the normal. The largest totals in inches (including melted snow) were Ligonier, 8.29; Johnstown, 7.99; Grampian Hills, 7.01; Columbus, 6.67; Meadville, 6.65; Uniontown, 6.64, and Pittsburgh, 6.09.

The least were Blue Knob, 2.13, Greenville, 2.50; Chambersburg, 2.54; Wysox, 2.71, and Drifton, 2.90.

The snowfall was light outside of the more elevated sections. Dyberry reports 17.5 inches; Blue Knob, 16.0; Nisbet, 15.0; Grampian Hills, 13.5; Eagle's Mere, 12.5; and Le Roy, 12.3. Several stations report snow on the ground at the end of the month. Heavy rains occurred on the 16th and 17th, which caused heavy freshets in many parts of the state.

*Wind and Weather.*

The prevailing wind was from the northwest.

Average number: Rainy days, 12; clear days, 6; fair days, 8; cloudy days, 14.

CORRECTION.—For January. Greatest monthly range, 55.0 at Somerset. Least local monthly range 34.0 at Chambersburg.





|                                                                                                                                                                                                                                                |        |        |        |        |      |     |       |      |     |      |      |      |      |     |     |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|------|-----|-------|------|-----|------|------|------|------|-----|-----|-----|
| Huntingdon, <sup>*</sup>                                                                                                                                                                                                                       | 650    | 33.5   | 64     | 17.18  | 5    | 5   | 44.1  | 28.1 | 16  | 33   | 15   | 4    | 27   |     |     |     |
| Huntingdon,<br>The Normal College,<br>Petersburg,<br>Indiana—                                                                                                                                                                                  | 700    | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  |     |     |     |
| Lancaster,<br>State Normal School,<br>Lancaster (21 days)                                                                                                                                                                                      | 1,350  | 30.041 | 30.359 | 29.081 | 34.5 | 60  | 25    | 4    | 5   | 43.7 | 23.4 | 20.3 | 43   | 6   | 6   | 1   |
| Lawrence,<br>New State,<br>Lancaster and Marshall College,<br>Lebanon,                                                                                                                                                                         | 413    | 30.128 | 30.705 | 29.253 | 37.2 | 66  | 17    | 14   | 5   | 48.8 | 28.3 | 20.5 | 36.5 | 19  | 9.5 | 10  |
| Lebanon,<br>Coopersburg,<br>Lebanon,                                                                                                                                                                                                           | 432    | ...    | ...    | ...    | 38.3 | 64  | 20    | 5    | 4   | 45.6 | 24.9 | 20.7 | 40   | 20  | 7   | 21  |
| Luzerne,<br>Driftton—                                                                                                                                                                                                                          | 474    | 30.119 | 30.684 | 29.496 | 37.1 | 64  | 17    | 16   | 28  | 45.2 | 28.5 | 15.7 | 27.4 | 26  | 7.6 | 9   |
| Luzerne,<br>Wilkes Barre,<br>Nisbet,<br>Lycoming, <sup>*</sup>                                                                                                                                                                                 | 520    | ...    | ...    | ...    | 35.5 | 60  | 17    | 8    | 28  | 44.5 | 28.1 | 16.4 | 32   | 6   | 7   | 7   |
| McKean,<br>Smithport,<br>Greenville,<br>Thiel College,                                                                                                                                                                                         | 1,655  | ...    | ...    | ...    | 31.6 | 56  | 16.17 | 5    | 5   | 41.3 | 28.2 | 18.1 | 31   | 18  | 6   | 25  |
| Mifflin,<br>Northampton,<br>Philadelphia, <sup>*</sup>                                                                                                                                                                                         | 575    | ...    | ...    | ...    | 34.7 | 58  | 25.26 | 10   | 5   | 42.9 | 26.6 | 16.4 | 31   | 26  | 8   | 25  |
| Philadelphia,<br>Schuylkill,<br>Snyder,<br>Somerset,<br>Tioga,<br>Union, <sup>*</sup>                                                                                                                                                          | 550    | ...    | ...    | ...    | 33.9 | 60  | 25    | 11   | 5   | 38.6 | 21.9 | 16.7 | 35   | 5   | 6.5 | 26  |
| Warren,<br>Washington,<br>Wayne,<br>Westmoreland,<br>Wyoming, <sup>*</sup>                                                                                                                                                                     | 1,500  | ...    | ...    | ...    | 34.3 | 56  | 25    | 2    | 5   | 43.7 | 25.6 | 18.1 | 35   | 15  | 5.9 | 8   |
| York,<br>York,                                                                                                                                                                                                                                 | 1,000  | 30.004 | 30.574 | 29.306 | 34.6 | 61  | 21    | 13   | 5   | 44.5 | 30.9 | 13.6 | 27   | 28  | 2   | 7   |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 300    | ...    | ...    | ...    | 37.7 | 62  | 17    | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 117    | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 120    | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 30,053 | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 445    | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 2,250  | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 2,000  | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 1,327  | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 30,042 | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 30,652 | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 34.9   | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 56     | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 1,410  | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 950    | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 1,100  | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 1,000  | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 1,750  | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 600    | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 30,477 | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 29,590 | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |
| York,<br>Bethlehem,<br>Signal Office,<br>Philadelphia,<br>Charlottesville,<br>Scholesville,<br>Eagle's Mere,<br>Walsboro,<br>Columbus,<br>Canonsburg,<br>Dyersburg,<br>Honesdale,<br>Ligonier (26 days),<br>South Eaton,<br>York, <sup>*</sup> | 37     | ...    | ...    | ...    | ...  | ... | ...   | ...  | ... | ...  | ...  | ...  | ...  | ... | ... | ... |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.     | STATION.                         | Relative humidity. | Dew point. | PRECIPITATION. |                              |                                          |                           | NUMBER OF DAYS |       | WIND.   |         |         |                       |
|-------------|----------------------------------|--------------------|------------|----------------|------------------------------|------------------------------------------|---------------------------|----------------|-------|---------|---------|---------|-----------------------|
|             |                                  |                    |            | Total inches.  | Total snowfall during month. | Depth of snow on ground at end of month. | Number of days rain-fall. | Clear.         | Part. | Cloudy. | 7 a. m. | 2 p. m. | PREVAILING DIRECTION. |
|             |                                  |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
|             |                                  |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
| Allegheny.* | Pittsburgh.                      | 79.2               | 32.8       | 6.09           | 2.30                         | 2                                        | 14                        | 5              | 6     | 17      | NW      | NW      | NW                    |
| Bedford.    | Charlottesville.                 | 75                 | 28.1       | 4.50           | 1.25                         |                                          | 11                        | 3              | 12    | 13      | SW      | SW      | SW                    |
| Blair.      | Altoona (26 days).               | 73.5               | 32         | 4.50           |                              |                                          | 13                        |                |       |         |         |         |                       |
| Blair.      | Blue Knob.                       |                    |            | 2.13           | 16                           | 34                                       | 13                        | 6              | 5     | 18      | SW      | NW      | SW                    |
| Blair.      | Holidaysburg.                    |                    |            | 5.92           | 4.75                         | 1.25                                     | 11                        | 3              | 11    | 14      | W       | W       | W                     |
| Bradford.   | Wysox.                           | 77                 | 29         | 2.71           | 6.05                         |                                          | 10                        | 5              | 3     | 20      | SE      | SW      | SW                    |
| Bradford.   | Le Roy.                          | 79.7               | 26.1       | 3.13           | 12.30                        | 1                                        | 14                        | 7              | 11    | 10      | N       | S       | S                     |
| Bucks.      | Forks of Neshaminy.              | 81                 | 24.1       | 4.50           | 6                            | 3                                        | 16                        | 5              | 8     | 13      | NW      | SW      | NW                    |
| Bucks.      | Quakertown.                      | 87.6               | 33         | 5.13           |                              |                                          | 17                        | 3              | 9     | 16      | SW      | SW      | NW                    |
| Cambria.*   | Johnstown.                       |                    |            | 7.99           | 6.37                         | 3                                        | 13                        | 4              | 9     | 15      | W       | SE      | W                     |
| Cameron.    | Emporium.                        |                    |            | 4.56           |                              |                                          | 8                         | 4              | 7     | 7       |         |         |                       |
| Carbon.*    | Mauch Chunk (18 days).           |                    |            | 3.92           |                              |                                          |                           |                |       |         |         |         |                       |
| Centre.     | State College                    |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
| Chester.    | Agricultural Experiment Station. | 84.3               | 31.4       | 5.20           | 4.05                         | 1.80                                     | 13                        | 3              | 9     | 16      | W       | W       | W                     |
| Chester.    | West Chester.                    | 73                 | 30         | 5.02           | 4.25                         | 1                                        | 15                        | 0              | 6     | 12      | NW      | NW      | W                     |
| Chester.*   | Contesville.                     |                    |            | 5.31           | 6                            | 3                                        | 18                        | 5              | 11    | 12      | W       | W       | W                     |
| Chester.    | Kennett Square.                  |                    |            | 5.84           | 3                            |                                          | 17                        | 9              | 6     | 13      | NW      | NW      | NW                    |
| Chester.    | Phoenixville.                    | 77.9               | 30.3       | 4.20           | 6.50                         |                                          | 15                        | 5              | 8     | 15      | SE      | SE      | NW                    |
| Chester.    | Westtown.                        |                    |            | 4.14           | 4                            | 1                                        | 9                         | 1              | 7     | 14      | W       | W       | W                     |
| Clarion.    | Rimersburg.                      |                    |            |                |                              |                                          | 14                        | 4              | 10    | 14      | W       | W       | W                     |
| Clarion.    | Clarion                          |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
| Clearfield. | State Normal School.             |                    |            | 7.01           | 13.50                        | 6                                        | 14                        | 4              | 9     | 15      | W       | W       | SW                    |
| Clinton.    | Grambs Hill.                     |                    |            | 4.13           | 3                            | 6                                        | 11                        | 10             | 3     | 15      | W       | W       | SW                    |
| Columbia.   | Lock Haven.                      |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
| Columbia.   | Catawissa.                       |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
| Crawford.   | Meadville.                       | 82                 | 27.8       | 6.65           | 5.76                         | 4                                        | 14                        | 2              | 11    | 15      | W       | W       | W                     |
| Cumberland. | Carlisle.                        | 84                 | 29         | 4.22           | .50                          |                                          | 13                        | 6              | 10    | 12      | W       | W       | W                     |
| Dauphin.*   | Harrisburg.                      | 72                 | 28         | 3.31           |                              |                                          | 14                        | 6              | 7     | 15      | NW      | NW      | NW                    |
| Delaware.   | Swarthmore                       |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
|             | Swarthmore College.              | 78                 | 31         | 4.46           | 2                            |                                          | 11                        |                | 13    | 15      | NW      | NW      | NW                    |
| Erie.*      | Erie.                            |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
| Fayette.    | Uniontown.                       | 81                 | 27         | 4.95           |                              |                                          | 19                        | 3              | 9     | 16      | SW      | SW      | SW                    |
| Franklin.*  | Chambersburg                     |                    |            | 6.64           |                              |                                          | 12                        | 9              | 10    |         | SW      | SW      | SW                    |
|             | Wilson Female College.           |                    |            |                |                              |                                          |                           |                |       |         |         |         |                       |
| Fulton.     | McConnellsburg.                  | 87.4               | 31.8       | 2.54           | 1                            |                                          | 7                         | 10             | 4     | 14      | NW      | SW      | W                     |
|             |                                  | 77.4               | 30.6       | 1.64           |                              |                                          | 8                         | 9              | 8     | 11      |         |         |                       |

| Huntingdon,*   | Huntingdon—<br>The Normal College,<br>Petersburg,<br>Indiana                                  | 84.3 | 30.3 | 5.99 | 3 | 2    | 13 | 4 | 9  | 15 | W  | W  |
|----------------|-----------------------------------------------------------------------------------------------|------|------|------|---|------|----|---|----|----|----|----|
| Lancaster.     | State Normal School,<br>Lancaster (21 days),<br>Franklin and Marshall College,<br>New Castle, | 86   | 35.1 | 3.01 | 3 | 1.50 | 9  | 3 | 12 | 13 | NW | NW |
| Lawrence.      | Lebanon.                                                                                      | 90.7 | 36   | 3.87 | 2 | 2.50 | 12 | 3 | 9  | 16 | NW | NW |
| Lebanon.       | Lehigh.                                                                                       | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Lehigh.        | Coopersburg.                                                                                  | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Luzerne.       | Darton.                                                                                       | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Luzerne.*      | Darton Hospital.                                                                              | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Luzerne.*      | Wilkes-Barre.                                                                                 | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Lycoming.*     | Nisbet.                                                                                       | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| McKean.        | Smithport.                                                                                    | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Mercer.*       | Greenville                                                                                    | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Mifflin.       | Thiel College.                                                                                | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Mifflin.       | Pottstown.                                                                                    | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Northampton.   | Bethlehem.                                                                                    | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Philadelphia.* | Philadelphia                                                                                  | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Philadelphia.  | Signal Office.                                                                                | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Schuylkill.    | Philadelphia.                                                                                 | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Snyder.        | Gimmsbury.                                                                                    | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Somerset.      | Somerset.                                                                                     | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Sullivan.      | Eagle's Mere.                                                                                 | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Toga.          | Wellsboro'.                                                                                   | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Union.*        | Lewisburg.                                                                                    | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Warren.        | Columbus.                                                                                     | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Washington.    | Canonsburg.                                                                                   | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Wayne.         | Dyberry.                                                                                      | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Wayne.         | Honesdale.                                                                                    | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Westmoreland.  | Lehigh (26 days).                                                                             | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| Wyoming.*      | South Easton.                                                                                 | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |
| York.*         | York.                                                                                         | 77.9 | 31.1 | 3.33 | 2 | 2.50 | 12 | 1 | 12 | 8  | NW | NW |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

## PRECIPITATION FOR FEBRUARY, 1891.

|     | Altoona. | Bethlehem. | Blue Knob. | Brower's Lock. | Canonsburg. | Carlisle. | Calwassa. | Chambersburg. | Charlottesville. | Clarton. | Cotestville. | Columbus. | Coopersburg. | Doylestown. | Drifton. | Dyberry. | Eagle's Mere. | Emporium. | Erlet. | Forks of Neshaminy. | Frederick. | Germanstown. | Girardville. |
|-----|----------|------------|------------|----------------|-------------|-----------|-----------|---------------|------------------|----------|--------------|-----------|--------------|-------------|----------|----------|---------------|-----------|--------|---------------------|------------|--------------|--------------|
| 1.  | .18      |            | .05        | .36            | .35         | .42       | .18       | .18           | .32              | .29      | .62          | .49       | .22          | .19         | .30      | .45      | .19           | .30       | .45    | .28                 | .47        |              | .14          |
| 2.  | .04      |            | .01        | .28            | .19         | .24       | .05       | .04           | .28              | .04      | .22          | .30       | .20          | .12         | .17      | .10      | .16           | .17       | .02    | .28                 | .25        |              | .22          |
| 3.  | .04      |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           | .03    |                     |            |              |              |
| 4.  | .04      |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 5.  | .04      |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 6.  | .04      |            |            | .08            | .37         |           | 1.39      |               | .07              | .59      | .35          | .12       |              |             |          |          | .43           | .12       | .18    | .15                 | .04        |              |              |
| 7.  | .16      |            | .02        | .41            | .65         |           | .03       |               | .04              | .08      | .27          | .20       |              | .43         | .12      | .48      | .24           | .36       | .28    | .26                 | .45        |              | .34          |
| 8.  | .07      |            | .04        | .06            | .65         | .65       | .03       |               | .04              | .08      | .27          | .20       |              | .43         | .12      | .48      | .24           | .36       | .28    | .26                 | .45        |              | .14          |
| 9.  | .39      |            | .04        | .53            | .49         | .65       | .55       |               | .11              | .38      | .52          | .52       |              | .52         | .24      | .43      | .74           | .24       | .55    | .42                 | .42        |              | .94          |
| 10. | .37      |            | .15        | .09            | .11         |           | .21       |               | .11              | .10      |              | .08       |              | .08         |          | .14      | .04           | .14       | .02    | .08                 | .10        |              |              |
| 11. |          |            | .15        |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 12. |          |            |            |                | .01         |           | .01       |               | .03              | .02      |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 13. |          |            |            |                |             |           |           | .08           |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 14. |          |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 15. | .73      |            | .23        | .57            | .48         | .60       | .76       | .60           | .79              | 1.54     | 1.06         | .94       | .10          | 1.13        | .80      | .97      | .89           | .94       | .94    | .89                 | .72        |              | .86          |
| 16. | .95      |            | .16        | .32            | .60         | .32       | .82       |               | .54              | 1.06     | .32          | .11       | .54          | .71         | .54      | .94      | .23           | .40       | .94    | .23                 | .40        |              | .82          |
| 17. | .17      |            | .08        |                |             |           |           |               |                  | .14      | .03          |           |              |             |          | .19      |               | .32       | .08    |                     |            |              |              |
| 18. |          |            | .02        |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 19. | .40      |            |            | .37            | .55         |           |           |               | .50              | .57      | .33          | .28       |              | .68         |          | .68      | .42           | .63       | .61    | .41                 | .35        |              | .40          |
| 20. | .10      |            | .15        |                |             | .35       | .59       |               |                  | .43      | .37          | .39       |              |             |          | .40      | .26           | .17       | .24    | .44                 | .41        |              | .44          |
| 21. |          |            | .03        | .14            | .08         |           |           |               | .23              | .01      | .03          | .26       |              |             | .20      |          |               |           | .01    | .25                 |            |              |              |
| 22. |          |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 23. |          |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 24. |          |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 25. |          |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 26. | .05      |            |            | .65            | .05         | .20       | .01       |               | .17              | .42      | .10          | .34       |              | .18         |          | .18      | 1.38          | .32       | .04    | .21                 | .13        |              | .08          |
| 27. |          |            |            |                |             |           |           |               | .72              | .02      | .40          | .82       |              | .22         |          | .07      |               | .77       | .03    | .02                 |            |              | .26          |
| 28. |          |            |            | .30            | .04         |           |           |               | .05              | .05      |              |           |              | .21         |          |          |               | .86       | .03    |                     | .04        |              | .28          |
| 29. |          |            |            | .30            |             |           |           |               | .12              |          |              |           |              | .18         |          |          | .38           | .23       | .04    |                     |            |              | .36          |
| 30. |          |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
| 31. |          |            |            |                |             |           |           |               |                  |          |              |           |              |             |          |          |               |           |        |                     |            |              |              |
|     | 4.59     | 2.13       | 4.50       | 4.22           | 4.54        | 4.10      | 5.31      | 6.07          | 4.57             | 4.89     | 4.97         | 5.46      | 4.50         | 4.50        | 4.50     | 4.50     | 4.50          | 4.50      | 4.50   | 4.50                | 4.50       | 4.50         | 4.36         |

\* No record.

† United States Signal office.



## PRECIPITATION FOR FEBRUARY, 1891—Continued.

|     | Grampian Hills. | Greenville. | Hamburg. | Harrisburg.* | Hollidaysburg. | Honesdale. | Huntingdon. | Indiana. | Johnstown. | Kennett Square. | Lancaster. | Lansdale. | Lebanon. | Le Roy. | Lewisburg. | Monter. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Nisbel. | Ottsville. |
|-----|-----------------|-------------|----------|--------------|----------------|------------|-------------|----------|------------|-----------------|------------|-----------|----------|---------|------------|---------|-------------|--------------|------------|-----------------|-------------|---------|------------|
| 1.  | .32             | .10         | .42      | .39          | .17            | .17        | .15         | .65      | .30        | .24             | .41        |           | +        | .12     |            | +       | .42         | +            | .49        | .30             | .08         |         | .40        |
| 2.  | .21             | .05         | .21      | .20          | .10            | .10        | .15         | .20      | .33        | .33             | .32        | .28       |          | .11     | .18        | 1.45    | .08         |              | .02        | .20             | .02         | .30     | .25        |
| 3.  |                 |             |          |              |                |            |             |          |            |                 |            |           |          | .03     |            |         |             |              | .10        |                 |             |         |            |
| 4.  |                 |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 5.  |                 |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 6.  |                 |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 7.  | .65             | .19         | .50      | .60          | 1.57           | .66        | 1.20        | .87      | .95        | .53             | .45        | .35       | .65      | .75     | .94        | .61     | .50         | .44          | .44        | 1.09            | .41         | 1.00    | .30        |
| 8.  | .25             | .05         | .07      | .12          | .15            | .15        |             | .06      | .13        | .13             | .55        | .03       |          |         |            |         | .20         | .60          | .41        | .72             | .13         | .70     | .23        |
| 9.  | 1.00            | .40         | .43      | .41          | .62            | .49        | .70         | .35      | .87        | .46             | .55        | .50       | .44      | .20     | .80        | .74     | .50         | .41          | 1.11       |                 |             |         |            |
| 10. |                 |             | .17      | .10          | .15            |            | .20         | .50      | .69        | .18             | .09        | .09       | .11      | .12     |            | .78     | .45         | .18          |            |                 |             |         | .11        |
| 11. |                 |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 12. | .12             |             |          | .08          |                |            |             |          | .01        | .13             |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 13. | .14             |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 14. | .15             |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 15. | .05             |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 16. | 2.25            | .08         | .78      | .47          | 1.72           | .60        | 1.04        | .60      | 2.25       | .86             | .65        | .79       | .85      | .35     |            | 2.40    | 1.00        | 1.04         | 1.14       | .56             |             |         | .61        |
| 17. | .45             | .40         | .33      | .40          | .33            | .48        | .55         | 1.40     | .98        | .51             | .23        | .31       | .26      | .53     |            | 1.20    | .06         | .63          | 1.43       | .30             | 1.17        | 1.70    | .20        |
| 18. | .15             | .25         |          |              | .14            |            |             | .30      | .25        | .12             |            |           | .01      | .03     | 1.40       |         |             | .04          | .30        |                 |             | .20     | .02        |
| 19. |                 |             |          |              |                |            |             | .02      |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 20. | .85             | .12         | .33      | .26          | .81            |            | .15         | .60      | .62        | .40             |            | .47       | .40      | .45     | .03        | .65     | .49         | .79          | .35        | .56             | .56         | .70     | .38        |
| 21. | .35             | .29         | .15      | .35          | .16            |            | .50         | .30      | .20        | .64             | .29        | .37       | .32      | .12     | .06        | .28     | .34         |              | .52        | 1.05            | .35         | .30     | .20        |
| 22. | .22             |             |          | .08          | .02            |            |             | .01      | .29        | .03             |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 23. | .23             |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 24. | .24             |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 25. | .25             |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 26. | .18             | .20         | .11      | .02          | .03            | .06        |             | .04      | .14        | .08             | .35        | .08       | .08      | .18     | .19        | .03     | .04         | .37          | .38        |                 | .63         |         |            |
| 27. | .05             | .05         | .09      | .02          | .18            |            |             | .05      | .16        |                 | .40        |           |          | .07     |            | .05     |             |              | .05        |                 | .04         | .20     | .21        |
| 28. | .02             | .03         |          |              |                |            |             | .07      | .03        | .12             |            |           | .01      | .07     | .15        | .10     |             |              | .05        |                 | .04         | .01     | .13        |
| 29. | .38             | .12         |          |              | .15            | .10        | .20         | .10      | .38        |                 |            |           |          |         |            |         |             |              | .20        | .05             | .07         | .20     |            |
| 30. |                 |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
| 31. |                 |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |         |             |              |            |                 |             |         |            |
|     | 7.01            | 2.50        | 3.94     | 3.31         | 5.92           | 3.45       | 4.84        | 5.99     | 7.99       | 5.84            | 3.01       | 4.43      | 3.33     | 3.13    | 3.75       | 8.29    | 4.13        | 3.92         | 6.65       | 4.44            | 3.87        | 5.20    | 4.02       |

\* United States Signal office.

† No record.

## PRECIPITATION FOR FEBRUARY, 1891—Continued.

|        | Petersburg. | Philadelphia.* | Philadelphia. | Phoenixville. | Pittsburgh.* | Point Pleasant. | Pottstown. | Quakertown. | Reading. | Scholarville. | Schmargrove. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellsboro. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. |
|--------|-------------|----------------|---------------|---------------|--------------|-----------------|------------|-------------|----------|---------------|--------------|-----------------|-----------|--------------|----------------|-------------|------------|------------|---------------|-----------|---------------|--------|-------|
| 1.     |             | .21            | .22           | .13           | .50          | .34             | .40        | .50         | .17      |               | .51          | .52             | .12       | .10          | .27            |             | .03        |            | .32           |           | .17           |        | .37   |
| 2.     |             | .28            | .25           | .29           | .31          | .26             | .27        | .25         | .29      | .32           |              | .25             | .12       | .11          | .17            | .27         | .39        | .14        | .34           | .27       | .30           |        | .32   |
| 3.     |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 4.     |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 5.     |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 6.     |             | .18            | .23           | .08           |              |                 |            | .08         | .10      | .45           |              | .10             | .22       | .46          | .40            | .15         | .61        | .35        | .14           | .15       | .15           | .07    | .68   |
| 7.     |             | .41            | .46           | .40           | .15          |                 | .63        | .40         | .13      | .05           |              | .20             | .16       | .10          | .20            | .54         | .07        | .07        | .07           | .35       | .25           | .87    |       |
| 8.     |             | .06            | .06           |               |              | .55             | .60        | .08         | .13      | .05           | 1.22         | .16             | .35       | .30          | .55            | .53         | .60        | .30        | .54           | .07       | .38           | .40    | .50   |
| 9.     |             | .30            | .51           | .53           | .40          |                 | .60        | .54         | .40      | .12           |              | .48             | .35       | .15          | .16            | .13         | .05        |            | .16           | .52       |               |        | .11   |
| 10.    |             | .16            | .11           | .11           | .25          | .50             |            | .11         | .14      |               |              | .10             | .04       | .15          |                |             |            |            |               |           |               |        |       |
| 11.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 12.    |             | .01            |               |               |              |                 |            |             | .01      |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 13.    |             | .02            | .02           |               |              |                 |            |             |          |               | 1.05         |                 |           |              |                |             |            |            | .04           | .05       |               |        | .01   |
| 14.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 15.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 16.    |             | .74            | .78           | .54           | 1.64         |                 | .46        | .79         | .61      | .86           |              | .71             | 2.45      | .25          | .33            | .75         | 1.81       | .94        | .88           |           | .40           | .01    | .23   |
| 17.    |             | .84            | .86           | .44           | .81          | .98             | .40        | .37         | .36      | .83           |              | .35             | .30       | .64          | .29            | .29         | .84        | 1.04       | 1.21          | .60       | 1.07          | .66    | .13   |
| 18.    |             |                |               |               | .20          |                 |            | .02         |          |               |              |                 | .13       | .10          | .21            |             | .09        |            | .02           |           |               |        |       |
| 19.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 20.    |             | .28            | .85           | .41           | .60          |                 | .50        | .34         | .26      | .30           |              | .31             | .10       | .47          | .44            | .85         | .61        | .25        | .40           |           | .45           | .23    | .11   |
| 21.    |             | .52            | .63           | .34           | .34          |                 | .40        | .50         | .35      | .38           | .22          | .33             | .30       | .26          | .40            | .41         | .73        |            | .17           |           | .53           | .17    | .02   |
| 22.    |             | .30            | .32           | .20           |              | .94             |            | .00         | .05      | .02           |              | .18             |           |              |                | .50         |            |            |               |           |               |        |       |
| 23.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 24.    |             |                |               |               |              |                 |            | .02         |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 25.    |             |                |               |               |              |                 | .05        | .14         | .07      |               | .02          | .25             |           | .23          | .18            |             | .08        | .54        | .28           | .02       | .18           | .10    | .15   |
| 26.    |             | .54            | .60           | .09           | .18          | .20             | .35        | .35         | .12      | .30           |              | .52             | .10       | .01          |                | .54         |            | .77        | .50           |           |               |        | .25   |
| 27.    |             |                | .09           |               |              | .01             | .04        |             | .05      | .04           |              |                 | .35       | .30          | .16            |             | .10        | .20        | .04           |           | .30           | .02    | .01   |
| 28.    |             |                |               |               |              | .97             |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 29.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 30.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| 31.    |             |                |               |               |              |                 |            |             |          |               |              |                 |           |              |                |             |            |            |               |           |               |        |       |
| Total. |             | 4.71           | 5.32          | 4.29          | 6.09         | 4.67            | 4.05       | 5.13        | 3.51     | 3.17          | 3.09         | 4.51            | 5.50      | 5.48         | 5.29           | 4.46        | 6.64       | 3.46       | 5.92          | 4.14      | 4.00          | 2.71   | 3.37  |

\* United States Signal office.

For March, 1891.

*Temperature.*

The mean temperature of fifty-three stations for March, 1891, was  $34^{\circ}.1$ , which is nearly  $2^{\circ}.0$  below the normal, and  $0^{\circ}.7$  above the corresponding month of 1890.

The mean of the daily maxima and minima temperatures  $42^{\circ}.0$  and  $25^{\circ}.7$  give an average daily range of  $16^{\circ}.3$ , and a monthly mean of  $33^{\circ}.8$ .

Highest monthly mean,  $38^{\circ}.4$  at Philadelphia.

Lowest monthly mean,  $29^{\circ}.1$  at Eagle's Mere.

Highest temperature recorded during the month,  $60^{\circ}.0$  on the 18th at Pittsburgh and Uniontown.

Lowest temperature, minus  $14^{\circ}$  on the 2d at Dyberry and Columbus.

Greatest local monthly range,  $70^{\circ}$  at Smethport and Dyberry.

Least local monthly range,  $43^{\circ}$ , at Harrisburg.

Greatest daily range,  $42^{\circ}$  at Emporium on the 30th.

Least daily range,  $1^{\circ}$  at Pottstown on the 27th.

From January 1, 1891, to March 31, 1891, the excess in temperature at Philadelphia was  $185^{\circ}$ , at Erie  $261^{\circ}$ , and at Pittsburgh  $258^{\circ}$ .

The warmest days of the month were the 18th, 23d and 30th. The coldest were the 1st and 2d.

*Barometer.*

The mean pressure for the month, 30.10, is about .08 above the normal. At the United States signal service stations, the highest observed was 30.63, at Pittsburgh, on the 1st, and the lowest, 29.36, at Pittsburgh on the 13th.

*Precipitation.*

The average precipitation, 5.10 inches for the month, is an excess of about 2.00 inches. The largest totals in inches (including melted snow) were Selinsgrove, 8.39; West Chester, 8.33; Kennett Square, 8.04; Charlesville, 7.89; McConnellsburg, 7.45, and Phoenixville, 7.42.

The least were Erie, 2.44, and Columbus, 2.72.

The largest monthly snowfall totals in inches were Charlesville, 39; Blue Knob, 34; Carlisle, 33, and Grampian Hills, 31.

The snow storm of the 27th was very severe in the Schuylkill and Lebanon valleys. Heavy drifts occurred and caused delay to traffic. The snow soon melted and very little was left on the ground at the end of the month.

*Wind and Weather.*

The prevailing wind was from the northeast. The month was cold, wet, and generally unpleasant and unhealthy. Vegetation is backward. The prospects for grain and fruit are favorable.

Average number: Rainy days, 14; clear days, 7; fair days, 8; cloudy days, 16.



|                                |       |        |        |            |    |      |      |      |      |      |    |     |    |
|--------------------------------|-------|--------|--------|------------|----|------|------|------|------|------|----|-----|----|
| McConnellsburg,                | 875   | 31.4   | 58     | 25         | 7  | 6    | 43.5 | 26.3 | 17.2 | 34   | 30 | 5   | 2  |
| Huntingdon—                    |       |        |        |            |    |      |      |      |      |      |    |     |    |
| The Normal College,            | 650   | 32.5   | 60     | 18, 19, 30 | 5  | 1, 6 | 42   | 23   | 19   | 30   | 18 | 5   | 8  |
| Petersburg,                    | 700   |        |        |            |    |      |      |      |      |      |    |     |    |
| Indiana,                       |       |        |        |            |    |      |      |      |      |      |    |     |    |
| State Normal School (30 days), | 1,350 | 30.048 | 30.503 | 18         | —  | 1    | 42.3 | 23   | 19.3 | 37   | 18 | 5   | 20 |
| Lancaster,                     |       |        | 29.547 |            |    |      |      |      |      |      |    |     |    |
| Franklin and Marshall College, | 4.3   | 30.132 | 30.943 | 23         | 10 | 3    | 45.3 | 25.2 | 20.1 | 33.5 | 18 | 8   | 21 |
| Lawrence,                      | 932   |        | 29.257 | 23         | —  |      | 42.9 | 34.5 | 16.4 | 33   | 30 | 6   | 22 |
| Lebanon,                       | 474   | 30.122 | 30.586 | 23         | 10 | 2    | 42.2 | 27.1 | 13.9 | 37.6 | 30 | 6.5 | 8  |
| Lehigh,                        | 920   |        | 29.449 | 30         | 8  | 2    | 42.6 | 27.1 | 13.9 | 34   | 30 | 5   | 20 |
| Coopersburg,                   |       |        | 35     | 63         |    |      |      |      |      |      |    |     |    |
| Drifton,                       |       |        |        |            |    |      |      |      |      |      |    |     |    |
| Drifton Hospital,              | 1,655 |        |        | 30         | 5  | 2    | 45.6 | 26.6 | 19   | 30   | 14 | 10  | 21 |
| Luzerne,*                      | 575   |        | 36.1   |            |    |      |      |      |      |      |    |     |    |
| Wilkes-Barre,                  | 515   |        | 34.8   |            |    |      |      |      |      |      |    |     |    |
| Lycouning,*                    | 540   |        | 31.9   | 18         | 9  | 2    | 40.1 | 21.2 | 18.9 | 38.5 | 30 | 6   | 27 |
| McKeap,                        | 1,300 |        |        |            |    |      |      |      |      |      |    |     |    |
| Mercer,*                       |       |        |        |            |    |      |      |      |      |      |    |     |    |
| Greenville—                    |       |        |        |            |    |      |      |      |      |      |    |     |    |
| Thiel College,                 | 1,000 | 30.045 | 30.577 | 18         | 0  | 1    | 41.8 | 24.2 | 17.5 | 30.5 | 18 | 4.4 | 14 |
| Mifflin,                       | 150   |        | 36.9   | 30         | 10 | 2    | 43   | 30   | 13   | 27   | 11 | 1   | 27 |
| Northampton                    | 390   |        |        |            |    |      |      |      |      |      |    |     |    |
| Bethlehem,                     |       |        |        |            |    |      |      |      |      |      |    |     |    |
| Philadelphia,*                 |       |        |        |            |    |      |      |      |      |      |    |     |    |
| Signa, Office,                 | 117   | 30.169 | 29.540 | 23         | 12 | 2    | 45.2 | 30.9 | 14.3 | 24   | 9  | 6   | 20 |
| Philadelphia,                  | 120   | 30.114 | 30.590 | 23         | 13 | 2    | 46.1 | 30.8 | 15.3 | 26   | 30 | 6.5 |    |
| Grardville,                    | 1,000 | 30.085 | 29.570 | 53         | 1  | 2    | 41   | 25   | 16   | 23   | 30 | 7   | 8  |
| Schuylkill,                    | 1,200 |        | 29.550 | 11         | 7  |      |      |      |      |      |    |     |    |
| Snyder,                        | 445   | 30.144 | 29.522 | 34         | 2  |      |      |      |      |      |    |     |    |
| Selinsgrove,                   | 2,350 |        | 30.547 | 23         | —  |      | 42.2 | 26.2 | 16   |      |    |     |    |
| Sellersburg,                   | 2,250 |        | 30.1   | 63         | 25 | 6    | 41.2 | 21.8 | 19.4 | 40   | 17 | 8   | 15 |
| Souders,                       | 2,090 | 30.195 | 29.403 | 23         | 12 | 2    | 34.8 | 20.7 | 14.1 | 30   | 2  | 4   | 31 |
| Warre's Mere,                  | 1,327 | 30.088 | 30.2   | 30         | —  | 2    | 37.6 | 23.5 | 14.1 | 31   | 30 | 4   | 12 |
| Leadsboro,*                    | 1,357 |        | 30.578 | 30         | 6  | 2    | 42.9 | 27.2 | 15.7 | 34   | 30 | 5   | 9  |
| Lewistown,*                    | 1,400 |        | 35     | 30         | 14 | 2    | 40.6 | 22   | 18.6 | 41   | 6  | 2   | 3  |
| Luzerne,                       | 1,410 |        | 31     | 62         |    |      |      |      |      |      |    |     |    |
| Columbia,                      | 950   |        |        |            |    |      |      |      |      |      |    |     |    |
| Canonsburg,                    | 1,000 |        | 30.2   | 30         | —  | 2    | 38.4 | 29.1 | 16.3 | 34   | 2  | 4   | 30 |
| Dyberry,                       | 1,000 |        | 32.4   | 23         | 7  | 2    | 40.7 | 24.3 | 16.2 | 32   | 11 | 6   | 20 |
| Wayne,                         | 1,000 |        | 32.4   | 23         | 7  | 2    | 40.7 | 24.3 | 16.2 | 32   | 11 | 6   | 20 |
| Honesdale,                     | 1,750 |        | 36.3   | 18         | 4  | 1    | 44.3 | 19.9 | 33   | 24   | 6  | 6   | 20 |
| Ligonier,                      | 680   |        | 33.8   | 30         | 0  | 2    | 41.2 | 26.5 | 14.7 | 29   | 26 | 1   | 12 |
| South Eaton,                   |       |        | 34.9   | 30         | 10 | 2    | 43.6 | 26   | 17.8 | 35   | 30 | 5   | 18 |
| York,*                         | 885   | 30.044 | 29.535 | 37         |    |      |      |      |      |      |    |     |    |

\* Observations taken at 8 a. m. and 8 p. m.



## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.     | STATION.                         | Relative humidity. | Dew point. | PRECIPITATION. |                              |                                          |                           | NUMBER OF DAYS |       |         | WIND.   |         |         |
|-------------|----------------------------------|--------------------|------------|----------------|------------------------------|------------------------------------------|---------------------------|----------------|-------|---------|---------|---------|---------|
|             |                                  |                    |            | Total inches.  | Total snowfall during month. | Depth of snow on ground at end of month. | Number of days rain-fall. | Clear.         | Fair. | Cloudy. | 7 a. m. | 2 p. m. | 9 p. m. |
|             |                                  |                    |            |                |                              |                                          |                           |                |       |         |         |         |         |
| Allegheny.  | Pittsburgh.                      | 71.6               | 27.5       | 3.11           | 7.69                         | ..                                       | 17                        | 6              | 7     | 18      | SE      | SE      | SE      |
| Bedford.    | Charlestown.                     | 73                 | 25.5       | 1.89           | .39                          | ..                                       | 15                        | 7              | 3     | 21      | SW      | SW      | S       |
| Berks.      | Reading.                         | 73                 | 25.5       | 2.85           | ..                           | ..                                       | 13                        | 7              | 3     | 21      | SE      | SE      | SE      |
| Blair.      | Blair.                           | 69.5               | 29         | 2.02           | 3.27                         | ..                                       | 16                        | 7              | 3     | 21      | SE      | SE      | SE      |
| Blair.      | Blair.                           | 69.5               | 29         | 2.02           | 3.27                         | ..                                       | 16                        | 7              | 3     | 21      | SE      | SE      | SE      |
| Blair.      | Harrisburg.                      | 75                 | 26.5       | 5.60           | 13.25                        | 24                                       | 13                        | 9              | 6     | 17      | SE      | SE      | SE      |
| Bradford.   | Bradford.                        | 74.5               | 24.7       | 3.12           | 12.20                        | ..                                       | 15                        | 8              | 6     | 11      | NE      | NE      | NE      |
| Bradford.   | Bradford.                        | 74.5               | 24.7       | 3.12           | 12.20                        | ..                                       | 15                        | 8              | 6     | 11      | NE      | NE      | NE      |
| Bucks.      | Forks of Nesqueh.                | 77                 | 27.1       | 4.61           | ..                           | ..                                       | 14                        | 14             | 6     | 11      | NE      | NE      | NE      |
| Bucks.      | Quakertown.                      | 77                 | 27.1       | 4.61           | ..                           | ..                                       | 14                        | 14             | 6     | 11      | NE      | NE      | NE      |
| Cambria.    | Johnstown.                       | 74                 | 27         | 5.12           | 12.50                        | ..                                       | 21                        | 7              | 6     | 13      | NE      | NE      | NE      |
| Carlton.*   | Mauch Chunk (28 days).           | 74                 | 27         | 5.12           | 12.50                        | ..                                       | 21                        | 7              | 6     | 13      | NE      | NE      | NE      |
| Centre.     | State College—                   | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 8                         | 11             | 5     | 12      | NW      | NW      | NW      |
| Chester.    | Agricultural Experiment Station. | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Chester.    | West Chester.                    | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Chester.    | West Chester.                    | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Chester.    | Kennett Square.                  | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Chester.    | Phoenixville.                    | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Chester.    | Westtown.                        | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Clarion.    | Rimersburg.                      | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Clarion.    | Clarion—                         | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Clarion.    | State Normal School.             | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Clearfield. | Gramplan Hills.                  | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Clinton.    | Lock Haven.                      | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Columbia.   | Catawissa.                       | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Crawford.   | Meadville.                       | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Cumberland. | Carlisle.                        | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Dauphin.*   | Harrisburg.                      | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Delaware.   | Spartanburg.                     | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Erie.*      | Stearns College.                 | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Erie.*      | Erie.                            | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Fayette.    | Uniontown.                       | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Franklin.*  | Chambersburg—                    | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |
| Franklin.*  | Wilson Female College.           | 84.6               | 27.3       | 4.07           | 15.05                        | ..                                       | 14                        | 4              | 12    | 15      | E       | E       | E       |

| Locality.                      | 82   | 29.3 | 7.45 | 24    | 4    | 13 | 9  | 5  | 17 | N  | NW | NW |
|--------------------------------|------|------|------|-------|------|----|----|----|----|----|----|----|
| Fulton,                        |      |      |      |       |      |    |    |    |    |    |    |    |
| Huntingdon,*                   |      |      |      |       |      |    |    |    |    |    |    |    |
| Huntingdon,                    |      |      | 4.48 |       |      | 9  | 8  | 10 | 13 | W  | W  | W  |
| Indiana,                       |      |      |      |       |      |    |    |    |    |    |    |    |
| State Normal School (30) days, |      |      |      |       |      |    |    |    |    |    |    |    |
| Lancaster,                     | 81.9 | 29.3 | 3.50 | 4.05  |      | 16 | 4  | 11 | 15 | NE | SE | SW |
| Lawrence,                      |      |      |      |       |      |    |    |    |    |    |    |    |
| Franklin and Marshall College, | 81.5 | 34.1 | 6.30 | 21    |      | 13 | 5  | 13 | 13 | NE | SE | SE |
| Lebanon,                       | 84.7 | 35.4 | 5.32 | 5.25  |      | 11 | 6  | 7  | 18 | SE | SE | E  |
| Lehigh,                        | 73.7 | 27.7 | 5.30 | 15.70 |      | 15 | 6  | 12 | 13 | NE | NE | NE |
| Coopersburg,                   |      |      | 6.54 | 6.50  | .60  | 12 | 9  | 5  | 17 | NW | NW | NW |
| Luzerne,                       |      |      |      |       |      |    |    |    |    |    |    |    |
| Drifton                        |      |      |      |       |      |    |    |    |    |    |    |    |
| Drifton Hospital,              |      |      |      |       |      |    |    |    |    |    |    |    |
| Wilkes-Barre,                  |      |      | 3.45 | 10    |      | 9  | 12 | 1  | 18 | NE | NE | NE |
| Lycoming,*                     |      |      | 5.20 | 20    |      | 11 | 8  | 6  | 17 | S  | S  | S  |
| Mckean,                        |      |      |      | 22    |      |    |    |    |    |    |    |    |
| Smethport,                     |      |      |      |       |      |    |    |    |    |    |    |    |
| Greenville-                    |      |      |      |       |      |    |    |    |    |    |    |    |
| Thiel College,                 | 92.6 | 28   | 3.33 | 18    |      | 15 | 4  | 11 | 16 | N  | NW | NW |
| Pottstown,                     | 74.5 | 28.5 | 6.00 | 8     |      | 10 | 13 | 6  | 12 | W  |    |    |
| Bethlehem,                     |      |      |      |       |      |    |    |    |    |    |    |    |
| Philadelphia—                  |      |      |      |       |      |    |    |    |    |    |    |    |
| Signal Office,                 | 70   | 26   | 4.42 | 4.70  |      | 15 | 7  | 8  | 16 | NE | NE | NE |
| Philadelphia,                  | 78   | 30.1 | 5.76 | 5     |      | 15 | 4  | 10 | 17 | NE | NE | NE |
| Schuykill,                     |      |      | 3.80 | 11    |      | 14 | 14 | 6  | 11 | NE | NE | NE |
| Snyder,                        |      |      |      |       |      | 12 | 1  | 16 | 14 | NW | NW | NW |
| Scrimgrove,                    | 81.2 | 29.2 | 8.39 | 25.25 |      | 12 | 3  | 3  | 25 | NW | NW | NW |
| Somerset,                      | 92.1 | 31.1 | 5.37 | 23    |      | 12 | 3  | 3  | 25 | NW | NW | NW |
| Sullivan,                      | 72.6 | 20.1 | 5.88 | 14.25 | 3    | 11 | 9  | 7  | 17 | NW | NW | NW |
| Tioga,                         | 76.4 | 38.2 | 2.12 | 27.50 |      | 17 | 3  | 11 | 17 | S  | N  | N  |
| Wellshoro',                    |      |      |      |       |      | 10 | 6  | 15 | 17 | NE | NE | NE |
| Lewisburg,                     |      |      | 2.72 | 27.60 | 1    | 15 | 5  | 9  | 17 | E  | NE | NE |
| Columbus,                      |      |      |      |       |      |    |    |    |    |    |    |    |
| Canonsburg,                    |      |      |      |       |      |    |    |    |    |    |    |    |
| Washington,                    |      |      |      |       |      |    |    |    |    |    |    |    |
| Dyberry,                       |      |      | 4.19 | 11    | 3    | 13 | 5  | 9  | 17 | NW | NW | NW |
| Wayne,                         |      |      |      |       |      |    |    |    |    |    |    |    |
| Honesdale,                     |      |      | 4.32 | 10.50 | 3.50 | 12 |    |    |    |    |    |    |
| Wayne,                         |      |      |      |       |      | 11 | 13 | 3  | 15 |    |    |    |
| Ligonier,                      |      |      | 8.50 |       |      | 14 | 8  | 9  | 14 | NW | NW | NW |
| Westmoreland,                  |      |      |      | 15    |      |    |    |    |    |    |    |    |
| South Eaton,                   |      |      | 4.54 |       |      | 16 | 14 | 4  | 13 | NE | NE | NE |
| York,*                         | 86.4 | 29.6 | 6.07 | 24    | 2    |    |    |    |    |    |    |    |

14-16-91.

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

PRECIPITATION FOR MARCH, 1891.

|     | Altoona. | Bethlehem. | Blue Knob. | Brower's Lock. | (Anonsburg. | Carlisle. | Catawissa. | Chambersburg. | Charlestown. | Clinton. | Coopersburg. | Doylestown. | Drifton. | Dyersburg. | Eagle's Mere. | Emporium. | Ette.+ | Forks of Neshaminy. | Frederick. | Germanstown. | Girardville. |
|-----|----------|------------|------------|----------------|-------------|-----------|------------|---------------|--------------|----------|--------------|-------------|----------|------------|---------------|-----------|--------|---------------------|------------|--------------|--------------|
| 1.  | .05      | .15        | .15        | .20            | .13         | .10       | .10        | .10           | .10          | .10      | .10          | .10         | .10      | .10        | .10           | .10       | .10    | .10                 | .10        | .10          | .10          |
| 2.  | .05      | .15        | .15        | .20            | .13         | .10       | .10        | .10           | .10          | .10      | .10          | .10         | .10      | .10        | .10           | .10       | .10    | .10                 | .10        | .10          | .10          |
| 3.  | .13      | .20        | .20        | .20            | .51         | .20       | .20        | .20           | .20          | .20      | .20          | .20         | .20      | .20        | .20           | .20       | .20    | .20                 | .20        | .20          | .20          |
| 4.  | .05      | .05        | .05        | .05            | .05         | .05       | .05        | .05           | .05          | .05      | .05          | .05         | .05      | .05        | .05           | .05       | .05    | .05                 | .05        | .05          | .05          |
| 5.  | .05      | .05        | .05        | .05            | .05         | .05       | .05        | .05           | .05          | .05      | .05          | .05         | .05      | .05        | .05           | .05       | .05    | .05                 | .05        | .05          | .05          |
| 6.  | .05      | .05        | .05        | .05            | .05         | .05       | .05        | .05           | .05          | .05      | .05          | .05         | .05      | .05        | .05           | .05       | .05    | .05                 | .05        | .05          | .05          |
| 7.  | .13      | .04        | .04        | .04            | .21         | .15       | .15        | .15           | .15          | .15      | .15          | .15         | .15      | .15        | .15           | .15       | .15    | .15                 | .15        | .15          | .15          |
| 8.  | .15      | .06        | .06        | .06            | .27         | .27       | .27        | .27           | .27          | .27      | .27          | .27         | .27      | .27        | .27           | .27       | .27    | .27                 | .27        | .27          | .27          |
| 9.  | .23      | .30        | .30        | .30            | .43         | .43       | .43        | .43           | .43          | .43      | .43          | .43         | .43      | .43        | .43           | .43       | .43    | .43                 | .43        | .43          | .43          |
| 10. | .17      | .17        | .17        | .17            | .17         | .17       | .17        | .17           | .17          | .17      | .17          | .17         | .17      | .17        | .17           | .17       | .17    | .17                 | .17        | .17          | .17          |
| 11. | .37      | .07        | .07        | .07            | .44         | .44       | .44        | .44           | .44          | .44      | .44          | .44         | .44      | .44        | .44           | .44       | .44    | .44                 | .44        | .44          | .44          |
| 12. | .37      | .16        | .16        | .16            | .21         | .21       | .21        | .21           | .21          | .21      | .21          | .21         | .21      | .21        | .21           | .21       | .21    | .21                 | .21        | .21          | .21          |
| 13. | .17      | .33        | .33        | .33            | .03         | .03       | .03        | .03           | .03          | .03      | .03          | .03         | .03      | .03        | .03           | .03       | .03    | .03                 | .03        | .03          | .03          |
| 14. | .12      | .40        | .40        | .40            | .05         | .05       | .05        | .05           | .05          | .05      | .05          | .05         | .05      | .05        | .05           | .05       | .05    | .05                 | .05        | .05          | .05          |
| 15. | .12      | .05        | .05        | .05            | .10         | .10       | .10        | .10           | .10          | .10      | .10          | .10         | .10      | .10        | .10           | .10       | .10    | .10                 | .10        | .10          | .10          |
| 16. | .17      | .10        | .10        | .10            | .10         | .10       | .10        | .10           | .10          | .10      | .10          | .10         | .10      | .10        | .10           | .10       | .10    | .10                 | .10        | .10          | .10          |
| 17. | .17      | .10        | .10        | .10            | .10         | .10       | .10        | .10           | .10          | .10      | .10          | .10         | .10      | .10        | .10           | .10       | .10    | .10                 | .10        | .10          | .10          |
| 18. | .18      | .05        | .05        | .05            | .05         | .05       | .05        | .05           | .05          | .05      | .05          | .05         | .05      | .05        | .05           | .05       | .05    | .05                 | .05        | .05          | .05          |
| 19. | .15      | .55        | .55        | .55            | .35         | .35       | .35        | .35           | .35          | .35      | .35          | .35         | .35      | .35        | .35           | .35       | .35    | .35                 | .35        | .35          | .35          |
| 20. | .15      | .134       | .134       | .134           | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |
| 21. | .15      | .163       | .163       | .163           | .21         | .21       | .21        | .21           | .21          | .21      | .21          | .21         | .21      | .21        | .21           | .21       | .21    | .21                 | .21        | .21          | .21          |
| 22. | .15      | .20        | .20        | .20            | .20         | .20       | .20        | .20           | .20          | .20      | .20          | .20         | .20      | .20        | .20           | .20       | .20    | .20                 | .20        | .20          | .20          |
| 23. | .08      | .02        | .02        | .02            | .10         | .10       | .10        | .10           | .10          | .10      | .10          | .10         | .10      | .10        | .10           | .10       | .10    | .10                 | .10        | .10          | .10          |
| 24. | .13      | .01        | .01        | .01            | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |
| 25. | .13      | .13        | .13        | .13            | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |
| 26. | .13      | .13        | .13        | .13            | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |
| 27. | .13      | .13        | .13        | .13            | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |
| 28. | .43      | .31        | .31        | .31            | .195        | .195      | .195       | .195          | .195         | .195     | .195         | .195        | .195     | .195       | .195          | .195      | .195   | .195                | .195       | .195         | .195         |
| 29. | .13      | .13        | .13        | .13            | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |
| 30. | .13      | .13        | .13        | .13            | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |
| 31. | .13      | .13        | .13        | .13            | .13         | .13       | .13        | .13           | .13          | .13      | .13          | .13         | .13      | .13        | .13           | .13       | .13    | .13                 | .13        | .13          | .13          |

\* No record.

United States Signal office.

## PRECIPITATION FOR MARCH, 1891—Continued.

|     | Greenville. | Hamburg. | Harrisburg.* | Hollidaysburg. | Honesdale. | Huntingdon. | Indiana. | Johnstown. | Kennett Square. | Lancaster. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Ligonier. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Nisbet. | Ottisville. |
|-----|-------------|----------|--------------|----------------|------------|-------------|----------|------------|-----------------|------------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|---------|-------------|
| 1.  | .03         |          |              | .05            |            | .10         | .63      | .10        | .40             | .10        | .28       | .26      | .05     |            | .10       | .20         |              | .20        | .20             | .04         |         |             |
| 2.  | .02         | .14      | .08          | .30            | .06        | .30         | .10      | .25        | .25             | .20        | .33       | .32      | .50     | .45        | .05       | .40         | †            | .35        | .30             | .08         |         | .88         |
| 3.  | .05         | .41      | .40          | .12            | .55        | .20         | .62      | .22        | .36             | .20        | .53       |          |         |            |           |             |              |            |                 |             |         |             |
| 4.  | .05         |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 5.  | .05         |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 6.  | .05         |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 7.  | .05         |          |              | .10            |            |             | .05      | .02        | .02             | .05        | .01       | .01      | .05     | .35        |           | .05         |              |            | .05             |             |         |             |
| 8.  | .05         | .15      | .34          | .20            | .10        |             | .30      | .03        | .44             | .21        | .21       | .32      | .47     | .30        | .12       | .01         | .06          | .56        | .70             | .18         | .20     | .08         |
| 9.  | .05         | .45      | .43          | .50            | 1.24       | .96         | .30      | .53        | .32             | .43        | .32       | .01      | .01     |            | .35       | .25         | .31          |            | .35             |             | .60     | .43         |
| 10. |             | .09      | .02          |                |            |             | .02      | .02        | .18             | .03        |           |          |         |            |           |             |              |            |                 |             |         | .21         |
| 11. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 12. | .48         | .41      | .47          | .63            | .52        | .70         | .95      | .80        | .75             | .69        | .64       | .68      | .10     | 1.05       | .64       | .40         | .49          | .34        | .76             | .15         | .40     | .34         |
| 13. | .22         | .21      | .19          | .15            | .22        | .33         | .07      | .14        | .39             | .20        | .20       | .19      | .17     |            | .05       | .20         | .37          | .10        | .22             | .19         | .70     | .45         |
| 14. | .16         | .02      |              | .07            |            |             | †        | .11        | .01             | .01        |           |          |         |            | .20       |             |              |            |                 | .02         |         |             |
| 15. |             |          |              |                |            |             | .05      | .07        |                 |            |           |          | .02     |            |           |             |              |            |                 |             |         |             |
| 16. | .06         |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 17. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 18. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 19. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 20. | .30         | 1.26     | .43          | .51            | .41        |             | .15      | .70        | 1.47            | 1.28       | .69       | .73      | .75     | .40        | .31       | .05         | .56          | .49        | .54             | .33         | .60     | .12         |
| 21. |             | 1.14     | .17          |                | .32        |             | .33      | .04        | 1.71            | .12        | 1.31      | .07      | .23     |            | .29       |             |              |            |                 |             | 1.73    |             |
| 22. | .08         | .04      | .16          | .37            | .20        | .20         | .10      | .23        | .12             | .23        | .02       | .13      | .04     | .90        | .17       | .06         | 3.00         |            | .50             | .08         | .20     | .18         |
| 23. |             | .02      | .07          | .08            | .22        |             | .06      | .22        | .35             | .14        |           | .15      | .40     |            |           |             | .13          |            | .30             |             | .30     | .30         |
| 24. |             |          | .05          |                | .03        |             | .18      | .02        |                 |            |           |          | .18     |            |           | .04         |              |            |                 |             | .10     |             |
| 25. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 26. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 27. | .55         | .37      | .88          | .08            |            | .80         | .03      | .51        | .95             |            | .08       | 1.26     | .02     | 1.90       | .30       | 1.20        |              | .10        | 1.32            |             | 1.00    |             |
| 28. | .10         | .05      | .26          | .64            |            | .50         | .02      | .32        | .46             | 1.80       | .12       | .08      |         |            | 1.12      | .30         | .20          | .20        | .88             | .86         |         |             |
| 29. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 30. |             |          |              |                |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 31. | .65         | .36      | .32          | .74            | .34        | .78         | .90      | .56        | .40             | .65        | .47       | .47      | .12     | .45        | .44       | .13         | .18          | .47        | 1.33            | .71         | .50     | .31         |
|     | 3.97        | 5.48     | 4.25         | 5.60           | 4.32       | 4.48        | 3.50     | 4.90       | 8.04            | 6.30       | 4.67      | 5.30     | 3.15    | 6.40       | 4.50      | 4.06        | 5.69         | 3.37       | 7.45            | 9.32        | 5.20    | 4.54        |

† No record.

\* United States Signal office.

## PRECIPITATION FOR MARCH, 1891—Continued.

|     | Petersburg. | Philadelphia.* | Philadelphia. | Phoenixville. | Pittsburgh.* | Point Pleasant. | Portstown. | Quakertown. | Reading. | Selsholtzville. | Selinsgrove. | Smith's Corner. | Somerset. | South Batton. | State College. | Swarthmore. | Uniontown. | Wellsboro'. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. |
|-----|-------------|----------------|---------------|---------------|--------------|-----------------|------------|-------------|----------|-----------------|--------------|-----------------|-----------|---------------|----------------|-------------|------------|-------------|---------------|-----------|---------------|--------|-------|
| 1.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 2.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 3.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 4.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 5.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 6.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 7.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 8.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 9.  |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 10. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 11. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 12. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 13. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 14. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 15. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 16. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 17. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 18. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 19. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 20. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 21. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 22. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 23. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 24. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 25. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 26. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 27. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 28. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 29. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 30. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |
| 31. |             |                |               |               |              |                 |            |             |          |                 |              |                 |           |               |                |             |            |             |               |           |               |        |       |

\* United States Signal office.



For April, 1891.

*Temperature.*

The mean temperature of fifty stations for April, 1891, was  $49^{\circ}.8$ , which is about  $3^{\circ}$  above the normal, and  $1^{\circ}.1$  above the corresponding month of 1890.

The mean of the daily maxima and minima temperatures  $61^{\circ}$  and  $38^{\circ}.5$  give an average daily range of  $22^{\circ}.5$ , and a monthly mean of  $49^{\circ}.7$ .

Highest monthly mean,  $54^{\circ}.2$  at Philadelphia S. O.

Lowest monthly mean,  $44^{\circ}.4$  at Dyberry.

Highest temperature recorded during the month,  $87^{\circ}$  on the 30th at Carlisle, and on the 27th at Lewisburg.

Lowest temperature  $11^{\circ}.4$  on the 5th at Greenville.

Greatest local monthly range,  $68^{\circ}$  at Uniontown and Greenville.

Least local monthly range,  $53^{\circ}$  at Philadelphia.

Greatest daily range,  $55^{\circ}$  at Columbus on the 17th.

Least daily range,  $1^{\circ}$  at Le Roy on the 4th.

From January 1, 1891, to April 30, 1891, the excess in temperature at Philadelphia was  $286^{\circ}$ , at Erie  $347^{\circ}$ , and at Pittsburgh  $332^{\circ}$ .

The warmest days of the month were the 18th, 19th, 20th, 21st, 22d, 27th and 30th. The coldest were the 4th, 5th, 6th, 7th and 8th.

*Barometer.*

The mean pressure for the month, 30.02, is about .02 above the normal. At the United States signal service stations, the highest observed was 30.54, at Philadelphia, on the 10th, and the lowest, 29.48, at Philadelphia, on the 3d.

*Precipitation.*

The average precipitation, 2.08 inches for the month, is a deficiency of about three-quarters of an inch. The largest totals in inches (including melted snow) were Girardville, 3.54; Eagle's Mere, 3.15; Philadelphia, 2.82; Quakertown, 2.74, and Johnstown, 2.73.

The least were Wellsboro', 1.12; Somerset, 1.13; Carlisle, 1.18, and Pittsburgh, 1.18.

The largest monthly snowfall totals in inches were Blue Knob, 16; Dyberry, 10; Eagle's Mere, 5, and Le Roy, 5.

No snow reported on ground at the end of the month.

*Wind and Weather.*

The prevailing wind was from the northwest. The month was seasonable, with a slight excess of temperature, and a deficiency of rainfall. The prospects for grain, grass and fruit continue favorable.

Average number rainy days, 8; clear days, 13; fair days, 9; cloudy days, 8.

## MONTHLY SUMMARY OF REPORTS by Voluntary Observers of the Pennsylvania State Weather Service for April, 1891.

| COUNTY.     | STATION.                         | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL. |          |         | TEMPERATURE. |          |        |          | DAILY RANGE.     |                  |       |           |
|-------------|----------------------------------|-----------------------------------|---------------------------------|----------|---------|--------------|----------|--------|----------|------------------|------------------|-------|-----------|
|             |                                  |                                   | Mean.                           | Highest. | Lowest. | Mean.        | MAXIMUM. |        | MINIMUM. | Mean of maximum. | Mean of minimum. | Mean. | Greatest. |
|             |                                  |                                   |                                 |          |         |              | Highest. | Date.  |          |                  |                  |       |           |
|             |                                  |                                   |                                 |          |         |              |          | Date.  | Lowest.  | Date.            |                  | Mean. | Greatest. |
|             |                                  |                                   |                                 |          |         |              |          |        |          |                  |                  |       |           |
| Allegheny.* | Pittsburgh.                      | 847                               | 30.040                          | 30.410   | 29.570  | 53.4         | 81       | 21     | 24       | 5                | 63.2             | 43.7  | 38        |
| Bedford.    | Charlesville.                    | 1,300                             |                                 |          |         | 48.8         | 83       | 18     |          |                  | 62.8             | 34.8  | 28        |
| Berks.*     | Hamburg.                         | 330                               |                                 |          |         | 51.2         | 84       | 27     | 24       | 6.8.9            | 63.4             | 39.1  | 24.3      |
| Berks.*     | Reading.                         | 280                               |                                 |          |         | 53.3         | 82       | 18     | 27       |                  | 63.5             | 44.1  | 35        |
| Blair.*     | Altoona.                         | 1,161                             |                                 |          |         | 45.3         | 82       | 18     | 27       |                  | 63.5             | 44.1  | 35        |
| Blair.*     | Blue Knob.                       | 2,467                             |                                 |          |         | 50.4         | 83       | 27     | 21       | 8                | 64.7             | 36.2  | 28.5      |
| Blair.*     | Houdaysburg.                     | 947                               |                                 |          |         | 47.5         | 83       | 27     | 20       | 9                | 64.7             | 34.9  | 24.4      |
| Bradford.   | Wellsburg.                       | 718                               | 30.024                          | 30.484   | 29.563  | 47.2         | 83       | 27     | 20       | 5.6              | 56               | 37.9  | 18.1      |
| Bucks.      | Le Roy.                          | 1,400                             |                                 |          |         | 51.6         | 81       | 19     | 21       |                  | 61.6             | 37.4  | 24.2      |
| Bucks.      | Forks of Nesqueh.                |                                   |                                 |          |         | 50.4         | 84       | 27     | 23       | 5.6              | 62.9             | 38.7  | 24.2      |
| Rucks.      | Quakertown.                      | 536                               | 30.030                          | 30.520   | 29.590  | 50.8         | 84       | 27     | 23       | 5.6              | 62.9             | 38.7  | 24.2      |
| Rucks.*     | Johnstown.                       | 1,184                             | 30.065                          | 30.330   | 29.640  | 47.9         | 83       | 22     | 17       | 6                | 61.9             | 33.9  | 28        |
| Cambria.*   | Emporium.                        | 1,030                             |                                 |          |         | 47.5         | 80       | 19     | 26       | 8                | 56.1             | 38.9  | 17.2      |
| Cameron.    | Mauch Chunk (16 days).           | 550                               |                                 |          |         | 47.5         | 80       | 19     | 26       | 8                | 56.1             | 38.9  | 17.2      |
| Carbon.*    | State College—                   |                                   |                                 |          |         |              |          |        |          |                  |                  |       |           |
| Centre.     | Agricultural Experiment Station. | 1,191                             | 29.375                          | 30.444   | 29.307  | 49.5         | 82       | 12     | 20       | 5.6              | 59.1             | 38.9  | 29.3      |
| Chester.    | West Chester.                    | 455                               | 30.021                          | 30.478   | 29.483  | 51.5         | 81       | 12     | 27       | 5.6              | 62.7             | 42.5  | 19.2      |
| Chester.*   | Coatesville.                     | 290                               |                                 |          |         | 49.7         | 84       | 30     | 22       | 5.9              | 64               | 38.3  | 25.7      |
| Chester.*   | Pennett Square.                  | 270                               |                                 |          |         | 49.7         | 84       | 30     | 22       | 5.9              | 64               | 38.3  | 25.7      |
| Chester.    | Phoenixville.                    | 183                               | 30.031                          | 30.527   | 29.474  | 52.3         | 82       | 19     | 28       | 6                | 62.8             | 41.9  | 30.9      |
| Chester.    | Westerville.                     | 330                               |                                 |          |         | 52.3         | 82       | 19     | 28       | 6                | 62.8             | 41.9  | 30.9      |
| Clinton.    | Wintersburg.                     | 1,500                             |                                 |          |         | 48.2         | 80       | 17, 21 | 16       | 5                | 56.7             | 39.9  | 16.8      |
| Clinton.    | Clarton—                         |                                   |                                 |          |         |              |          |        |          |                  |                  |       |           |
| Clearfield. | State Normal School.             | 1,530                             |                                 |          |         | 46.9         | 80       | 22, 27 | 14       | 5                | 57               | 36.8  | 20.2      |
| Clinton.    | Grampian Hills.                  | 1,450                             |                                 |          |         | 46.9         | 80       | 22, 27 | 14       | 5                | 57               | 36.8  | 20.2      |
| Columbia.   | Lock Haven.                      | 560                               |                                 |          |         | 47.2         | 78       | 23, 30 | 14       | 5                | 56.9             | 38.6  | 20.3      |
| Columbia.   | Catawissa.                       | 491                               |                                 |          |         | 51.4         | 87       | 30     | 26       | 5.6              | 62.3             | 43.4  | 18.9      |
| Crawford.   | Meadville.                       | 1,300                             | 30.263                          | 30.650   | 29.800  | 51.4         | 87       | 30     | 26       | 5.6              | 62.3             | 43.4  | 18.9      |
| Crawford.   | Carlisle.                        | 430                               |                                 |          |         | 53           | 84       | 30     | 26       | 5.6              | 62.3             | 43.4  | 18.9      |
| Dauphin.*   | Harrisburg.                      | 361                               | 30.028                          | 30.502   | 29.529  | 52.2         | 81       | 19     | 25       | 7                | 62.4             | 41.4  | 21        |
| Delaware.   | Swarthmore—                      | 190                               | 30.012                          | 30.482   | 29.524  | 52.2         | 81       | 19     | 25       | 7                | 62.4             | 41.4  | 21        |
| Erie.*      | Swarthmore College.              | 190                               | 30.012                          | 30.482   | 29.524  | 52.2         | 81       | 19     | 25       | 7                | 62.4             | 41.4  | 21        |
| Erie.*      | Erie.                            | 681                               | 30.300                          | 30.410   | 29.590  | 47           | 78       | 30     | 24       | 6                | 55               | 39    | 16        |
| Fayette.    | Uniontown.                       | 1,000                             | 30.003                          | 30.272   | 29.570  | 53.1         | 83       | 21     | 15       | 5                | 64.1             | 42.1  | 33        |
| Fayette.    | Uniontown.                       |                                   |                                 |          |         | 53.1         | 83       | 21     | 15       | 5                | 64.1             | 42.1  | 33        |

| Franklin,*     | Chambersburg                                 | 618   |        |        |        | 36   | 30     | 24 | 5, 6, 8    | 64.5 | 39.2 | 25.6 | 71   | 30 | 9    | 10 |
|----------------|----------------------------------------------|-------|--------|--------|--------|------|--------|----|------------|------|------|------|------|----|------|----|
| Fulton.        | Wilson Female College.                       | 875   |        |        |        |      |        |    |            |      |      |      |      |    |      |    |
| Huntingdon.    | McConnellsburg.                              |       |        |        |        |      |        |    |            |      |      |      |      |    |      |    |
| Indiana.       | Union Normal College.                        | 650   |        |        |        | 50.2 | 27     | 22 | 6, 7, 8, 9 | 53.5 | 36.9 | 26.6 | 52   | 30 | 8    | 2  |
| Lancaster.     | Indiana—<br>State Normal School.             | 1,350 |        |        |        |      |        |    |            |      |      |      |      |    |      |    |
| Lawrence.      | Lancaster—<br>Franklin and Marshall College. | 413   | 30,068 | 30,465 | 29,576 | 52.9 | 19     | 24 | 5          | 63   | 39.3 | 23.7 | 46   | 27 | 8    | 2  |
| Lebanon.       | New Castle.                                  | 932   |        |        |        | 52.7 | 17, 30 | 18 | 6          | 62   | 43.4 | 15.6 | 41   | 29 | 9    | 4  |
| Lehigh.        | Lebanon.                                     | 474   | 30,035 | 30,507 | 29,545 | 52.1 | 30     | 24 | 8          | 65   | 35.1 | 25.6 | 46.4 | 18 | 7, 9 | 2  |
| Luzerne.       | Coopersburg.                                 | 520   |        |        |        | 51.7 | 30     | 23 | 8          | 60.9 | 40.7 | 20.2 | 36   | 27 | 4    | 10 |
| Luzerne,*      | Drifton—<br>Whitton Hospital.                | 1,655 |        |        |        |      |        |    |            |      |      |      |      |    |      |    |
| Luzerne,*      | Whites-Barre.                                | 575   |        |        |        | 51.3 | 84     | 22 | 8          | 63.9 | 38.7 | 25.2 | 45   | 30 | 12   | 1  |
| McKean.*       | Nisbet.                                      | 550   |        |        |        | 49.8 | 80     | 27 | 6          | 58.6 | 32.7 | 25.9 | 46.5 | 30 | 5, 5 | 4  |
| McKean.*       | Smithport.                                   | 1,500 |        |        |        | 46.4 |        | 15 |            |      |      |      |      |    |      |    |
| Mercer.*       | Greenville—<br>Thiel College.                | 1,000 | 29,941 | 30,368 | 29,530 | 47.7 | 79     | 17 | 5          | 59.2 | 36.3 | 22.9 | 42.5 | 13 | 8, 2 | 1  |
| Montgomery.    | Pottstown.                                   | 150   |        |        |        | 53.3 | 83     | 28 | 6          | 64.3 | 42.4 | 21.9 | 42   | 28 | 6    | 1  |
| Northampton.   | Bethlehem.                                   | 360   |        |        |        |      |        |    |            |      |      |      |      |    |      |    |
| Philadelphia.* | Philadelphia—<br>Signal Office.              | 117   | 30,090 | 30,540 | 29,480 | 54.2 | 83     | 19 | 30         | 6    | 64.4 | 44.5 | 19.9 | 34 | 30   | 5  |
| Philadelphia.  | Philadelphia.                                | 130   | 30,057 | 30,488 | 29,483 | 54.4 | 86     | 19 | 30         | 6    | 64.4 | 44.5 | 19.9 | 34 | 30   | 10 |
| Schenectady.   | Grandville.                                  | 1,000 | 29,982 | 30,407 | 29,534 | 49.9 | 79     | 23 | 8          | 59.6 | 37.7 | 21.9 | 38   | 27 | 7    | 2  |
| Schenectady.   | Schenectady.                                 | 445   |        |        |        | 46.4 |        |    |            |      |      |      |      |    |      |    |
| Somerset.      | Somerset.                                    | 2,250 |        |        |        |      | 84     | 20 | 5          | 61.2 | 35.9 | 25.3 | 46   | 20 | 6    | 4  |
| Sullivan.      | Bagle's Mere.                                | 2,060 | 30,056 | 30,514 | 29,553 | 44.6 | 76     | 27 | 16         | 5    | 53.9 | 36.9 | 17   | 29 | 5    | 3  |
| Sullivan.      | Wellsville.                                  | 1,327 | 29,980 | 30,403 | 29,502 | 45.2 | 82     | 27 | 16         | 8    | 57.3 | 35.2 | 46   | 27 | 4    | 1  |
| Tioga.         | Wellsville.                                  | 1,450 |        |        |        | 45.3 | 87     | 27 | 25         | 8    | 54.6 | 33.3 | 23.3 | 27 | 3    | 2  |
| Union.*        | Lewisburg.                                   | 1,410 |        |        |        | 45.3 | 84     | 21 | 6          | 56.7 | 33.3 | 22.3 | 55   | 17 | 3    | 3  |
| Warren.        | Columbus.                                    |       |        |        |        |      |        |    |            |      |      |      |      |    |      |    |
| Washington.    | Canonsburg.                                  | 950   |        |        |        | 44.4 | 81     | 17 | 6, 8       | 56.8 | 33.3 | 23.5 | 44   | 30 | 7    | 3  |
| Wayne.         | Dyberry.                                     | 1,000 |        |        |        | 46.9 | 80     | 18 | 5, 8       | 57.4 | 36   | 21.4 | 40   | 30 | 3    | 10 |
| Wayne.         | Honesdale.                                   | 1,000 |        |        |        | 53.2 | 83     | 16 | 5, 8       | 63.7 | 34   | 29.7 | 54   | 30 | 8    | 2  |
| Westmoreland.  | Ligonier (28 days).                          | 1,750 |        |        |        | 48.3 | 81     | 27 | 8          | 59.1 | 37.5 | 21.6 | 43   | 27 | 7    | 8  |
| Wyoming.       | South Union.                                 | 660   |        |        |        | 48.3 | 85     | 22 | 7          | 65.8 | 39.3 | 26.5 | 46.5 | 30 | 8    | 10 |
| York.*         | York.                                        | 385   | 29,994 | 30,428 | 29,545 | 52.5 |        | 22 |            |      |      |      |      |    |      |    |

† Observations taken at 12 noon.

\* Observations taken at 8 a. m. and 8 p. m.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.     | STATION.                         | Relative humidity. | PRECIPITATION. |                              |                                          |                           | NUMBER OF DAYS |       | WIND.    |         |         |
|-------------|----------------------------------|--------------------|----------------|------------------------------|------------------------------------------|---------------------------|----------------|-------|----------|---------|---------|
|             |                                  |                    | Dew point.     | Total snowfall during month. | Depth of snow on ground at end of month. | Number of days rain-fall. | Clear.         | Fair. | T. a. m. | 2 p. m. | 9 p. m. |
|             |                                  |                    |                |                              |                                          |                           |                |       |          |         |         |
| Allegheny,* | Pittsburgh.                      | 59.2               | 37.3           | 1.18                         | ..                                       | 11                        | 12             | 10    | NW       | NW      | NW      |
| Bedford.    | Chambersville.                   | 66.1               | 35             | 1.55                         | ..                                       | 5                         | 7              | 6     | S        | W       | N       |
| Berks.*     | Hanburg.                         | ..                 | 2.28           | ..                           | ..                                       | 10                        | 7              | 16    | ..       | ..      | ..      |
| Berks.      | Reading.                         | ..                 | 1.71           | ..                           | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Blair.†     | Altoona.                         | 48.3               | 34             | 1.36                         | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Blair.      | Blue Knob.                       | ..                 | ..             | 16.50                        | ..                                       | 6                         | 13             | 8     | NW       | NW      | NW      |
| Bradford.   | Holidaysburg.                    | 66                 | 39             | 1.60                         | ..                                       | 8                         | 12             | 9     | W        | W       | W       |
| Bradford.   | Wysox.                           | 71.5               | 38.5           | 1.79                         | ..                                       | 8                         | 12             | 4     | W        | W       | S       |
| Bucks.      | Le Roy.                          | ..                 | ..             | 2.01                         | 1                                        | 9                         | 12             | 17    | W        | SW      | W       |
| Bucks.      | Forks of Neshaminy.              | ..                 | 1.65           | ..                           | ..                                       | 8                         | 13             | 14    | W        | W       | W       |
| Bucks.      | Quakertown.                      | 66.2               | 39.3           | 2.74                         | ..                                       | 10                        | 12             | 11    | SW       | W       | W       |
| Cambria.*   | Johnstown.                       | 81                 | 44.3           | 2.73                         | 1                                        | 10                        | 8              | 15    | SW       | NW      | NW      |
| Cameron.    | Easton.                          | ..                 | ..             | 2.33                         | ..                                       | 8                         | 12             | 10    | W        | W       | W       |
| Carbon.*    | Mauch Chunk (16 days).           | ..                 | ..             | .89                          | ..                                       | 6                         | 10             | 1     | ..       | ..      | ..      |
| Centre.     | State College.                   | 63.6               | 38.2           | .50                          | ..                                       | 10                        | 13             | 7     | W        | W       | W       |
| Chester.    | Agricultural Experiment Station. | 62                 | 39             | ..                           | ..                                       | 12                        | 19             | 4     | NW       | W       | W       |
| Chester.    | West Chester.                    | ..                 | ..             | ..                           | ..                                       | 9                         | 14             | 8     | NW       | W       | W       |
| Chester.*   | Coatesville.                     | ..                 | 2.32           | ..                           | ..                                       | 8                         | 16             | 7     | NW       | NW      | NW      |
| Chester.    | Kennett Square.                  | 74.4               | 47.1           | 2.87                         | ..                                       | 11                        | 18             | 5     | NW       | NW      | NW      |
| Chester.    | Phoenixville.                    | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | NW       | NW      | NW      |
| Clarke.     | Westtown.                        | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | W        | W       | W       |
| Clarke.     | Rimersburg.                      | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Clarion.    | Clarion—                         | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Clearfield. | State Normal School.             | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Clinton.    | Grantian Hills.                  | ..                 | 2.34           | 4                            | ..                                       | 9                         | 11             | 11    | W        | W       | W       |
| Columbia.   | Lock Haven.                      | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Crawford.   | Catsville.                       | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Crawford.   | Meadville.                       | 89                 | 41.3           | 1.59                         | ..                                       | 4                         | 12             | 10    | W        | W       | W       |
| Cumberland. | Carlisle.                        | 78.7               | 43.2           | 1.18                         | ..                                       | 8                         | 14             | 11    | W        | NW      | W       |
| Dauphin.*   | Harrisburg.                      | 36.5               | 1.70           | ..                           | ..                                       | 9                         | 17             | 5     | NW       | NW      | NW      |
| Delaware.   | Swarthmore—                      | ..                 | ..             | ..                           | ..                                       | ..                        | ..             | ..    | ..       | ..      | ..      |
| Erie.*      | Swarthmore College.              | 68                 | 32             | 1.53                         | ..                                       | 6                         | 4              | 16    | W        | W       | W       |
| Erie.       | Erie.                            | 77                 | 39             | 1.34                         | ..                                       | 13                        | 12             | 8     | W        | W       | W       |
| Fayette.    | Uniontown.                       | ..                 | 2.18           | 3.50                         | ..                                       | 8                         | 14             | 12    | NW       | NW      | NW      |

|               |                                         |      |      |      |   |    |    |    |    |    |
|---------------|-----------------------------------------|------|------|------|---|----|----|----|----|----|
| Franklin, *   | Chambersburg—<br>Wilson Female College, | 67.1 | 38.6 | 2.58 | 3 | 19 | 7  | E  | W  | W  |
| Fulton,       | McConnellsburg,                         |      |      |      |   |    |    | 4  | N  | N  |
| Huntingdon,   | Huntingdon                              |      |      |      | 4 | 19 | 6  | 5  | N  | N  |
| Indiana,      | The Normal College,                     |      | 1.92 |      |   |    |    |    |    |    |
| Lancaster,    | Indiana—<br>State Normal School,        |      |      |      |   |    |    |    |    |    |
| Lawrence,     | Lancaster,                              | 72.6 | 45.2 | 1.69 |   | 9  | 11 | 10 | 9  | NW |
| Lebanon,      | Lancaster and Marshall College,         |      |      | 2.36 |   | 9  | 11 | 7  | 12 | NW |
| Lehigh,       | New Castle,                             | 68.1 | 38.4 | 2.19 |   | 9  | 16 | 7  | 12 | NW |
| Luzerne,      | Lebanon,                                |      |      | 2.50 |   | 12 | 13 | 9  | 8  | NW |
|               | Coopersburg,                            |      |      |      |   |    |    |    |    | SE |
|               | Drifton—<br>Drifton Hospital,           |      |      |      |   |    |    |    |    |    |
| Luzerne,*     | Wilkes-Barre,                           |      |      | 9.38 |   | 8  | 17 |    | 13 | NW |
| Lycoming,*    | Nisbet,                                 |      |      | 2    |   | 7  | 16 | 4  | 10 | E  |
| McKean,       | Smithport,                              |      |      |      |   | 16 | 4  | 10 | W  | W  |
| Mercer,*      | Greenville,                             |      |      |      |   | 10 | 11 | 10 | 9  | S  |
|               | Thiel College,                          | 84.3 | 40.9 | 1.75 |   | 3  | 21 | 3  | 6  | W  |
| Montgomery,   | Thiel College,                          | 73   | 44.2 | 1.80 |   |    |    |    |    |    |
| Northampton,  | Petersburg,                             |      |      |      |   |    |    |    |    |    |
| Philadelphia, | Bethlehem,                              |      |      |      |   |    |    |    |    |    |
|               | Philadelphia—<br>Signal Office,         | 59   | 38   | 2.34 |   | 10 | 13 | 8  | 9  | NW |
| Philadelphia, | Philadelphia,                           | 71.2 | 43.1 | 2.82 |   | 11 | 13 | 8  | 9  | NW |
| Schenck,      | Girardville,                            |      |      | 3.75 |   | 10 | 19 | 4  | 7  | NW |
| Snyder,       | Selinsgrove,                            |      |      | 3.82 |   | 4  | 3  | 20 | 7  | NW |
| Somerset,     | Somerset,                               | 59.1 | 42.2 | 3.50 |   | 5  | 8  | 10 | 12 | NW |
| Sullivan,     | Eagle's Mere,                           | 67.9 | 35.6 | 3.15 |   | 8  | 13 | 7  | 10 | NW |
| Tioga,        | Wellsville,                             | 77.6 | 30.2 | 1.12 |   | 9  | 9  | 11 | 10 | N  |
| Union,*       | Lewistown,                              |      |      | 2.30 |   | 6  | 15 | 7  | 7  | NW |
| Warren,       | Union,                                  | 63.6 | 31   | 1.80 |   | 13 | 12 | 7  | 11 | SW |
| Washington,   | Canonsburg,                             |      |      |      |   |    |    |    |    | NW |
| Wayne,        | Derry,                                  |      |      | 2.42 |   | 6  | 10 | 10 | 10 | NW |
| Westmoreland, | Honesdale,                              | 55.6 | 37.5 | 2.68 |   | 11 | 18 | 4  | 8  | NW |
| Wyoming,*     | Ligonier (28 days),                     | 60   | 40   | .50  |   | 5  | 13 | 9  | 8  | NW |
| York,         | South Eaton,                            |      |      | 2.65 |   | 8  | 13 | 5  | 12 | NW |
|               | York,                                   | 71.6 | 41.3 | 2.01 |   | 9  | 13 |    |    | NW |

\* Observations taken at 8 a. m. and 8 p. m.

\* Observations taken at 12 noon.



## PRECIPITATION FOR APRIL, 1891.

|     | Altoona. | Bethlehem. | Blue Knob. | Bower's Lock. | Canonsburg. | Carlisle. | Catawissa. | Chambersburg. | Charlottesville. | Clinton. | Coatsville. | Columbus. | Coopersburg. | Doylestown. | Drifton. | Dyberry. | Eagle's Mere. | Emporium. | Porte.* | Forks of Neshaminy. | Frederick. | Gilardville. | Grampian Hills. |
|-----|----------|------------|------------|---------------|-------------|-----------|------------|---------------|------------------|----------|-------------|-----------|--------------|-------------|----------|----------|---------------|-----------|---------|---------------------|------------|--------------|-----------------|
| 1.  | .35      |            | .05        | .10           |             | .24       |            |               | .71              |          | .05         | .01       | .05          | .71         |          | .09      | .36           | .16       | .03     | .54                 | .09        | .22          | .48             |
| 2.  | .02      |            | .90        | .30           |             | .10       |            |               | .05              |          | .50         | .15       | .54          | .08         |          | .20      | .12           | .35       | .16     | .13                 | .39        | .22          | .48             |
| 3.  | .27      |            | .30        | .34           |             | .25       |            |               | .05              |          | .52         | .05       | .14          | .08         |          | .40      | .12           | .18       | .15     | .01                 | .23        | .23          | .12             |
| 4.  |          |            | .45        |               |             | .06       |            |               |                  |          | .04         | .03       | .08          |             |          |          |               |           | .09     |                     | .02        | .12          | .12             |
| 5.  |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 6.  |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 7.  |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 8.  |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 9.  |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 10. | .48      |            | .05        | .50           |             | .08       |            |               | .07              |          | .80         | .06       | .01          |             |          | .40      | .38           | .79       | .18     | .50                 | .50        | .17          | .80             |
| 11. | .02      |            | .02        | .36           |             | .15       |            |               | .04              |          | .06         | .10       | .08          | .97         |          | .15      | .74           | .42       | .02     | .27                 | .40        | .23          |                 |
| 12. |          |            |            |               |             |           |            |               |                  |          |             | .03       |              |             |          |          |               | .30       | .11     |                     |            | .20          |                 |
| 13. |          |            | .02        |               |             |           |            |               |                  |          |             | .05       |              |             |          | .07      |               |           | .01     | .12                 | .14        |              | .32             |
| 14. | .11      |            |            |               |             | .07       |            |               |                  |          | .01         |           | .10          | .06         |          |          | .18           | .17       | .10     | .04                 | .03        | .53          | .08             |
| 15. |          |            |            |               |             |           |            |               |                  |          | .06         | .09       | .04          |             |          | .72      | .78           |           |         |                     |            |              |                 |
| 16. |          |            |            | .37           |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 17. |          |            |            |               |             | .23       |            |               |                  |          |             | .02       | .18          |             |          |          | .11           | .20       | .03     |                     |            | .38          | .12             |
| 18. | .11      |            | .06        | .06           |             |           |            |               |                  |          | .12         | .06       | .18          | .10         |          | .24      | .48           | .18       | .02     | .04                 | .05        | .12          | .10             |
| 19. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 20. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 21. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 22. |          |            | .01        |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 23. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 24. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 25. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 26. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 27. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 28. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 29. |          |            |            | .04           |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
| 30. |          |            |            |               |             |           |            |               |                  |          |             | .75       |              |             |          |          |               |           | .02     |                     |            |              |                 |
| 31. |          |            |            |               |             |           |            |               |                  |          |             |           |              |             |          |          |               |           |         |                     |            |              |                 |
|     | 1.36     |            | 1.80       | 2.07          |             | 1.18      |            |               | 1.55             |          | 2.25        | 1.80      | 2.50         | 1.92        |          | 2.42     | 3.15          | 2.33      | 1.34    | 1.05                | 1.85       | 3.54         | 2.34            |

\* United States Signal office.

PRECIPITATION FOR APRIL, 1891—Continued.

|     |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
|-----|--|-------------|----------|--------------|----------------|------------|-------------|----------|------------|-----------------|-----------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|------------------|-------------|---------|-------------|
| 1.  |  | Greenville. | Hamburg. | Harttsburg.* | Holladaysburg. | Honesdale. | Huntingdon. | Indiana. | Johnstown. | Kennett Square. | Lanaster. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Likopier. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsbuurg. | New Castle. | Nisbet. | Ottisville. |
| 2.  |  | .95         | .20      | .05          | .05            | .50        | .10         |          | .36        | .13             | .05       | .05       | .05      | .10     | .10        | .25       |             | .11          | .40        | .52              |             | .50     | .12         |
| 3.  |  | .15         | .03      | .07          | .09            | .20        | .40         | .30      | .30        | .48             | .68       | .03       | .03      | .10     | .03        | .12       |             | .23          | .20        |                  |             | .23     | .23         |
| 4.  |  | .20         | .13      | .12          | .03            | .04        | .10         |          | .17        | .03             | .06       | .06       | .10      | .38     | .53        | .54       |             | .09          | .15        |                  | .46         | .33     | .03         |
| 5.  |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 6.  |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 7.  |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 8.  |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 9.  |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 10. |  | .09         | .86      | .01          | .02            | .16        |             |          | .72        | .81             | .78       | .70       | 1.44     | .50     | 1.00       | .84       |             | .05          | .55        | 1.72             | .08         | .10     | .03         |
| 11. |  | .22         | .08      | .99          | .64            | .07        | 1.32        |          | .03        | .34             | .63       | .40       |          |         |            |           |             | .35          |            |                  | .67         | .30     | .32         |
| 12. |  | .04         |          | .04          |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 13. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 14. |  | .16         | .02      | .06          |                | .12        |             |          | .25        |                 | .22       | .40       | .05      | .07     |            |           |             | .10          |            |                  | .05         | .10     |             |
| 15. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 16. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 17. |  | .03         | .19      | .06          | .04            | 1.03       |             | .20      |            | .06             | .14       | .10       | .09      | .21     | .72        | .46       |             | .10          |            | .34              | .18         | .70     | .17         |
| 18. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 19. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 20. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 21. |  |             | .98      |              | .10            | .30        |             |          | .14        |                 | .65       | .63       | .63      | .30     | .01        |           |             |              |            |                  | .33         | .10     |             |
| 22. |  |             | .25      |              | .06            | .04        |             | .06      |            | .06             |           | .08       | .01      | .17     |            |           |             |              |            |                  | .07         | .20     | .24         |
| 23. |  | .05         |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 24. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 25. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 26. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 27. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 28. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 29. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              |            |                  |             |         |             |
| 30. |  | .61         |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             |              | .34        |                  | .28         |         |             |
| 31. |  |             |          |              |                |            |             |          |            |                 |           |           |          |         |            |           |             | .89          | 1.53       | 2.58             | 2.36        | 2.00    | 1.70        |
|     |  | 1.75        | 2.26     | 1.70         | 1.60           | 2.63       | 1.92        |          | 2.73       | 2.32            | 1.69      | 2.12      | 2.19     | 2.01    | 2.39       | 2.23      |             |              |            |                  |             |         |             |

† No record.

\* United States Signal office.

PRECIPITATION FOR APRIL, 1891—Continued.

|     | Philadelphia * | Philadelphia | Phoenixville. | Pittsburg. * | Point Pleasant. | Pottstown. | Quakertown. | Reading. | Selsholtzville. | Sellingrove. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellsboro'. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. |
|-----|----------------|--------------|---------------|--------------|-----------------|------------|-------------|----------|-----------------|--------------|-----------------|-----------|--------------|----------------|-------------|------------|-------------|---------------|-----------|---------------|--------|-------|
| 1.  | .04            | .07          | .11           | .11          | .59             | .45        | .24         | .10      | .16             | .22          | .10             | .50       | .06          | .04            | .29         | .16        | .05         | .13           | . . .     | .18           | .46    | .06   |
| 2.  | .48            | .42          | .46           | .35          | .59             | .45        | .35         | .5       | .25             | .22          | .30             | .32       | .29          | .25            | .29         | .51        | .08         | .57           | . . .     | . . .         | . . .  | .35   |
| 3.  | .63            | .10          | .26           | .46          | .07             | .07        | .46         | .06      | .30             | . . .        | .02             | .08       | .24          | .04            | .37         | .36        | .10         | .04           | . . .     | .05           | . . .  | .08   |
| 4.  | .01            | .10          | .02           | . . .        | . . .           | . . .      | .04         | .08      | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | .22   |
| 5.  | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 6.  | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 7.  | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 8.  | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 9.  | . . .          | . . .        | . . .         | .01          | .18             | . . .      | . . .       | . . .    | . . .           | . . .        | .04             | . . .     | .30          | .02            | . . .       | .50        | .02         | .02           | . . .     | .05           | .25    | . . . |
| 10. | . . .          | .01          | .02           | .31          | .02             | .85        | .13         | .16      | 1.05            | 1.00         | .54             | .55       | .55          | .63            | .30         | .43        | .54         | .02           | .02       | .02           | .19    | . . . |
| 11. | .41            | .56          | 1.23          | . . .        | .12             | . . .      | .07         | .15      | . . .           | . . .        | .12             | . . .     | .69          | . . .          | .50         | . . .      | . . .       | 1.21          | . . .     | .92           | .10    | 1.07  |
| 12. | .16            | .23          | .18           | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | .05           | . . .     | . . .         | . . .  | .02   |
| 13. | . . .          | . . .        | . . .         | .01          | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | .04         | . . .         | . . .     | .18           | .03    | . . . |
| 14. | . . .          | . . .        | . . .         | .16          | . . .           | .50        | .15         | .01      | . . .           | .45          | . . .           | . . .     | . . .        | .14            | . . .       | .08        | . . .       | .02           | . . .     | .04           | . . .  | . . . |
| 15. | . . .          | . . .        | . . .         | . . .        | .10             | . . .      | .10         | .05      | . . .           | . . .        | .13             | . . .     | .46          | .07            | .06         | .03        | . . .       | .09           | . . .     | .29           | .23    | .04   |
| 16. | 1.03           | .97          | .43           | .03          | .03             | . . .      | .03         | .03      | . . .           | .02          | .02             | . . .     | . . .        | . . .          | . . .       | . . .      | .02         | .02           | . . .     | . . .         | . . .  | . . . |
| 17. | .04            | .10          | .05           | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 18. | . . .          | .05          | .10           | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 19. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 20. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | .15          | . . .           | . . .     | . . .        | . . .          | . . .       | .11        | .05         | . . .         | . . .     | . . .         | . . .  | . . . |
| 21. | . . .          | . . .        | . . .         | .07          | . . .           | . . .      | .17         | .11      | .37             | . . .        | .16             | . . .     | .24          | .15            | . . .       | . . .      | .02         | .04           | . . .     | .57           | .38    | . . . |
| 22. | . . .          | . . .        | . . .         | .05          | .17             | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | .39          | .02            | .01         | . . .      | . . .       | . . .         | . . .     | . . .         | .15    | .22   |
| 23. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 24. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 25. | . . .          | .05          | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 26. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 27. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 28. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 29. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 30. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
| 31. | . . .          | . . .        | . . .         | . . .        | . . .           | . . .      | . . .       | . . .    | . . .           | . . .        | . . .           | . . .     | . . .        | . . .          | . . .       | . . .      | . . .       | . . .         | . . .     | . . .         | . . .  | . . . |
|     | 2.34           | 2.82         | 2.87          | 1.18         | 1.70            | 1.80       | 2.74        | 1.71     | 2.11            | 1.82         | 1.75            | 1.13      | 2.85         | 1.47           | 1.53        | 2.18       | 1.12        | 2.32          | . . .     | 2.28          | 1.79   | 2.01  |

\* United States Signal office.

For May, 1891.

*Temperature.*

The mean temperature of fifty-two stations for May, 1891, was  $57^{\circ}.5$ , which is about  $2^{\circ}.5$  below the normal, and  $1^{\circ}.3$  below the corresponding month of 1890.

The mean of the daily maxima and minima temperatures  $69^{\circ}.2$  and  $45^{\circ}.4$  give an average daily range of  $23^{\circ}.8$ , and a monthly mean of  $57^{\circ}.3$ .

Highest monthly mean,  $61^{\circ}.0$  at Philadelphia S. O.

Lowest monthly mean,  $51^{\circ}.0$  at Wellsboro'.

Highest temperature recorded during the month,  $93^{\circ}.0$  on the 10th at Carlisle and McConnellsburg.

Lowest temperature  $20^{\circ}.0$  on the 4th at Dyberry.

Greatest local monthly range,  $64^{\circ}$  at Hollidaysburg and Dyberry.

Least local monthly range,  $48^{\circ}$  at Erie S. O.

Greatest daily range,  $53^{\circ}$  at Hollidaysburg on the 10th.

Least daily range,  $2^{\circ}$  at Wellsboro' on the 18th.

From January 1, 1891, to May 31, 1891, the excess in temperature at Philadelphia was  $258^{\circ}$ , at Erie  $250^{\circ}$ , and at Pittsburgh  $222^{\circ}$ .

The warmest days of the month were the 10th and 11th. The coldest were the 4th, 5th, 6th, 7th and 17th.

*Barometer.*

The mean pressure for the month, 30.07, is about .07 above the normal. At the United States signal service stations, the highest observed was 30.42, at Philadelphia, on the 20th, and the lowest 29.76 at Philadelphia, on the 16th.

*Precipitation.*

The average precipitation, 2.12 inches for the month, is a deficiency of about one and a quarter inches. The largest totals in inches (including melted snow) were Ligonier, 4.41, and Somerset, 4.16.

The least were Blue Knob, 0.31; Wysox, 0.49, and Lewisburg, 0.67.

The largest monthly snowfall totals in inches were Columbus, 2.00; Wellsboro', 1.50, and Meadville, 1.50.

*Wind and Weather.*

The prevailing wind was from the northwest.

Average number: Rainy days, 8; clear days, 10; fair days, 10, cloudy days, 11.









[illegible]

Observations taken at noon.

\* Observations taken at 8 a. m. and 8 p. m.

PRECIPITATION FOR MAY, 1891.

|    | Altoona | Bethlehem. | Blue Knob. | Brower's Lock. | Canonsburg. | Carlisle. | Catawissa. | Chambersburg. | Charlestown. | Charlton. | Columbus. | Coopersburg. | Doylestown. | Drifton. | Dyberry. | Eagle's Mere. | Emporium. | Eric.* | Forks of Nesaminy. | Frederick. | Girdardville. | Gramplan Hills. |
|----|---------|------------|------------|----------------|-------------|-----------|------------|---------------|--------------|-----------|-----------|--------------|-------------|----------|----------|---------------|-----------|--------|--------------------|------------|---------------|-----------------|
| 1  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 2  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 3  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 4  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 5  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 6  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 7  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 8  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 9  |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 10 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 11 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 12 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 13 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 14 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 15 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 16 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 17 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 18 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 19 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 20 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 21 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 22 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 23 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 24 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 25 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 26 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 27 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 28 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 29 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 30 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
| 31 |         |            |            |                |             |           |            |               |              |           |           |              |             |          |          |               |           |        |                    |            |               |                 |
|    | 1.97    | .31        | 2.15       |                | 2.17        |           |            |               |              |           | 3.64      | 2.25         | 3.43        |          | 2.27     | 2.67          | 1.06      | 1.49   | 2.66               | 1.60       | 1.80          | 1.29            |

\* United States Signal office.

## PRECIPITATION FOR MAY, 1891—Continued.

|     | Greenville | Hamburg. | Hartburg * | Hollydaysburg. | Honesdale. | Huntingdon. | Indiana. | Johnstown. | Kennett Square | Lancaster | Lansdale. | Lebanon. | Le Roy. | Lewisburg. | Ligonier. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Nisbet. | Ottisville. |
|-----|------------|----------|------------|----------------|------------|-------------|----------|------------|----------------|-----------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|---------|-------------|
| 1.  | .00        |          |            |                |            |             |          | .02        | .64            | .80       | .79       | .70      | .04     | .37        | .25       |             |              | .12        | .18             | .28         | .20     | .80         |
| 2.  |            |          |            |                |            |             |          | .17        |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 3.  | .05        | .58      | .52        | .12            | .41        | .20         |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 4.  | .03        |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 | .02         |         |             |
| 5.  |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 6.  | .10        |          |            |                | .05        |             |          |            |                |           |           |          | .04     | .65        |           |             | .01          | .05        |                 |             |         |             |
| 7.  |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 8.  |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 9.  |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 10. |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 11. |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 12. |            |          |            |                |            |             |          |            |                |           | .20       |          |         |            |           |             |              |            |                 | .01         | .10     |             |
| 13. |            |          |            |                |            |             |          |            |                |           |           | .07      |         |            |           |             | .04          |            |                 |             |         |             |
| 14. |            |          | .06        |                |            |             |          |            | .03            | .07       |           |          |         |            |           |             | .71          |            |                 |             |         |             |
| 15. |            | .07      | .16        |                | 1.14       |             |          |            | .37            | .25       | .14       | .07      |         | .23        |           |             |              |            |                 |             |         |             |
| 16. |            | .24      |            |                |            |             |          |            |                |           | .41       | .25      |         |            |           |             |              |            |                 |             |         |             |
| 17. |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 18. |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 19. |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 20. |            |          |            |                |            |             |          |            |                |           | .10       | .01      |         |            |           | 1.10        |              |            |                 | .05         |         |             |
| 21. | .05        |          | .12        | .72            | .06        | .25         |          | .31        | .08            |           |           |          |         | .25        | 1.49      | .15         | .07          | 1.18       | .25             | 1.08        | .40     |             |
| 22. | 1.31       | .63      | .03        | .28            | .03        | .27         |          | .32        | .04            | .25       | .32       | .10      | .21     |            | .36       |             | .10          |            | .43             | .13         | .30     |             |
| 23. | .21        | .02      | .29        | .25            |            | .55         |          | .23        | .20            | .12       | .03       | .73      | .18     |            | .41       | .02         |              |            | .16             |             |         |             |
| 24. |            | .06      | .02        |                |            | .05         |          |            | .07            | .03       | .01       | .12      |         |            |           |             |              |            |                 |             |         |             |
| 25. |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 26. | .02        |          | .13        |                |            |             |          |            | .38            | .18       | .28       | .24      |         |            |           |             |              |            |                 |             |         |             |
| 27. |            |          |            |                |            |             |          |            |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
| 28. | .18        | .24      | .36        | .14            | .15        | .12         |          | .15        |                |           |           | .02      |         |            |           |             |              |            |                 |             |         |             |
| 29. | 1.27       |          | .02        | .21            | .03        | .45         |          | .56        | .12            | .46       | .36       | .48      | .01     |            | .49       |             | .31          | .40        | .56             | .63         | .10     |             |
| 30. | .06        |          |            | .11            | .03        |             |          | .82        |                |           |           |          | .70     |            | 1.21      |             | .08          |            | .13             |             |         |             |
| 31. |            |          |            |                |            |             |          | .10        |                |           |           |          |         |            |           |             |              |            |                 |             |         |             |
|     | 3.31       | 2.24     | 1.77       | 1.95           | 1.92       | 1.60        |          | 3.44       | 1.93           | 2.48      | 2.66      | .3       | 1.18    | .67        | 4.41      | 1.27        | 1.24         | 1.93       | 1.71            | 2.42        | 1.20    | 3.01        |

† No record.

\* United States Signal office.



## PRECIPITATION FOR MAY, 1891—Continued.

|     | Philadelphia * | Philadelphia | Phoenixville. | Pittsburgh.* | Point Pleasant. | Pottstown | Quakertown. | Reading. | Seisholtzville | Selinsgrove. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellsboro'. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. |
|-----|----------------|--------------|---------------|--------------|-----------------|-----------|-------------|----------|----------------|--------------|-----------------|-----------|--------------|----------------|-------------|------------|-------------|---------------|-----------|---------------|--------|-------|
| 1.  |                |              |               | .59          |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 2.  |                |              |               | .22          | .80             | 1         | .79         | .40      | .68            | .41          | .79             |           | .14          | .12            | .63         | .19        |             | .86           | .70       | .51           | .08    | .67   |
| 3.  |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             | .02           |           |               |        |       |
| 4.  |                |              |               |              |                 |           |             | .40      |                |              |                 |           | .08          |                |             |            | .15         | .02           |           | .04           | .03    |       |
| 5.  |                |              |               |              |                 |           |             |          |                | .04          |                 |           |              |                |             |            |             |               |           |               |        |       |
| 6.  |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 7.  |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 8.  |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 9.  |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 10. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             | .87           | .45       |               |        |       |
| 11. |                |              |               | .01          |                 | .03       | .04         | .01      |                |              | .11             |           |              |                | .02         |            |             | .07           |           |               |        |       |
| 12. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 13. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 14. |                |              |               |              |                 |           | .22         | .03      | .18            |              | .00             |           | .54          |                | .45         |            |             | .33           | .47       | .53           | .04    | .05   |
| 15. |                |              |               |              | .12             | .23       | .32         | .03      | .37            | .07          | .72             |           |              |                |             |            |             | .18           |           |               |        | .27   |
| 16. |                |              |               |              | .75             | .17       | .52         | .03      |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 17. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 18. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 19. |                |              |               |              |                 |           |             | .01      |                |              | .08             |           |              |                |             |            |             | .17           | .61       |               |        | .05   |
| 20. |                |              |               | .10          | .28             |           | .11         |          | .08            | .10          |                 | .84       | .04          | .87            |             | .37        | .60         |               |           |               | .28    |       |
| 21. |                |              |               | .96          |                 |           | .26         | .11      | .60            | .22          | .47             | .92       | .12          | .14            |             | .73        | .02         |               |           | .22           | .05    | .01   |
| 22. |                |              |               | .24          | .32             | .05       |             | .16      | .18            |              |                 | .30       |              | .54            | .20         | .34        |             | .21           |           |               | .02    | .15   |
| 23. |                |              |               | .04          |                 | .30       | .03         | .05      | .08            |              |                 |           |              |                |             |            |             | .22           | .35       | .03           |        | .30   |
| 24. |                |              |               |              |                 | .05       |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        | .03   |
| 25. |                |              |               |              |                 |           |             | .65      | .22            |              | .19             |           | .03          |                | .48         |            |             | .53           | .58       |               |        | .12   |
| 26. |                |              |               |              | .26             | .20       | .23         | .65      |                |              |                 |           |              |                |             |            |             | .03           |           |               |        |       |
| 27. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             | .02           |           |               |        | .07   |
| 28. |                |              |               | .37          | .40             | .36       | .35         | .25      | .16            | .34          | .36             | .42       | .11          | .17            | .20         | .19        | .02         | .18           | .30       |               |        | .01   |
| 29. |                |              |               | .80          |                 |           | .01         |          |                |              |                 | .78       |              | .10            |             |            | .45         | .03           |           |               |        | .06   |
| 30. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             |            |             |               |           |               |        |       |
| 31. |                |              |               |              |                 |           |             |          |                |              |                 |           |              |                |             | .46        |             |               |           |               |        | .10   |
|     | 1.74           | 2.01         | 2.74          | 3.23         | 2.94            | 2.23      | 2.55        | 2.21     | 2.37           | 1.36         | 2.81            | 4.10      | 1.06         | 1.94           | 2.12        | 3.38       | 1.25        | 3.75          | 3.04      | 1.53          | .49    | 2.39  |

\* United States Signal office.

For June, 1891.

*Temperature.*

The mean temperature of fifty stations for June, 1891, was  $68^{\circ}.7$ , which is about normal, and  $1^{\circ}.6$  below the corresponding month of last year.

The mean of the daily maxima and minima temperatures,  $80^{\circ}.1$  and  $56^{\circ}.3$  gives an average daily range of  $23^{\circ}.8$ , and a monthly mean of  $68^{\circ}.2$ .

Highest monthly mean,  $72^{\circ}.8$  at New Castle.

Lowest monthly mean,  $63^{\circ}.7$  at Dyberry.

Highest temperature recorded during the month,  $100^{\circ}$  on the 7th, at Hamburg.

Lowest temperature,  $30^{\circ}$  on the 7th, at Selinsgrove.

Greatest local monthly range,  $69^{\circ}.0$  at Selinsgrove.

Least local monthly range,  $34^{\circ}$  at Kennett Square.

Greatest daily range,  $52^{\circ}$  at Selinsgrove on the 3d.

Least daily range,  $3^{\circ}$  at Dyberry and South Eaton on the 21st.

From January 1, 1891, to June 30, 1891, the excess in temperature at Philadelphia was  $270^{\circ}$ , at Erie,  $254^{\circ}$ , and at Pittsburgh,  $274^{\circ}$ .

The warmest days of the month were the 15th and 16th. The coldest were the 7th, 8th and 9th.

*Barometer.*

The mean pressure for the month, 29.97, is about .03 below the normal.

At the United States weather bureau stations, the highest observed was 30.26, at Harrisburg on the 8th, and the lowest 29.60 at Erie on the 18th.

*Precipitation.*

The average rainfall, 4.50 for the month, is an excess of about one-half inch.

The largest totals in inches were Swarthmore, 9.30, and Johnstown, 9.22.

The least were Erie, 1.22; Honesdale, 1.45 and Dyberry, 1.85.

*Wind and Weather.*

The prevailing wind was from the west.

Average number: Rainy days, 11; clear days, 14; fair days, 8; cloudy days, 8.

MONTHLY SUMMARY OF REPORTS by *Voluntary Observers of the Pennsylvania State Weather Service for June, 1891.*

| COUNTY.     | STATION.               | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL. |          |         | TEMPERATURE. |          |          |         |                  |       |              |       |        |       |
|-------------|------------------------|-----------------------------------|---------------------------------|----------|---------|--------------|----------|----------|---------|------------------|-------|--------------|-------|--------|-------|
|             |                        |                                   | Mean.                           | Highest. | Lowest. | MAXIMUM.     |          | MINIMUM. |         | Mean of minimum. |       | DAILY RANGE. |       |        |       |
|             |                        |                                   |                                 |          |         | Date.        | Highest. | Date.    | Lowest. | Date.            | Mean. | Greatest.    | Date. | Least. | Date. |
| Allegheny,* | Pittsburgh.            | 847                               | 29.980                          | 30.220   | 29.620  | 15           | 92       | 15       | 50      | 8                | 82.1  | 30           | 25    | 5      | 27    |
| Bedford,*   | Charlottesville.       | 1,300                             |                                 |          |         | 16           | 91       | 16       | 40      | 9                | 79    | 54           | 28    | 6      | 26    |
| Berks,*     | Hamburg.               | 880                               |                                 |          |         | 17           | 100      | 17       | 42      | 8                | 83.6  | 57.2         | 14    | 6      | 18    |
| Berks,†     | Reading.               | 280                               |                                 |          |         |              |          |          |         |                  |       | 41           |       |        |       |
| Blair.      | Altoona.               | 1,181                             |                                 |          |         | 15           | 95       | 15       | 48      | 8, 9             | 82.5  | 62.5         | 27    | 6      | 7     |
| Blair.      | Blue Knob.             | 2,500                             |                                 |          |         |              |          |          |         |                  |       | 30           |       |        |       |
| Blair.      | Holidaysburg.          | 947                               |                                 |          |         | 15           | 98       | 15       | 39      | 9                | 88    | 54           | 28    | 7      | 7     |
| Bradford.   | Wysox.                 | 718                               | 29.990                          | 30.290   | 29.695  | 15           | 98       | 15       | 35      | 9                | 80.4  | 49           | 9     | 7      | 21    |
| Bradford.   | Le Roy.                | 1,400                             |                                 |          |         | 16           | 98       | 16       | 40      | 5                | 77    | 58.9         | 10    | 2      | 21    |
| Bucks.      | Forks of Nesquehony.   |                                   |                                 |          |         |              |          |          |         |                  |       |              |       |        |       |
| Bucks.      | Quakertown.            | 536                               | 29.980                          | 30.230   | 29.720  | 16           | 97       | 16       | 43      | 9                | 81.7  | 53.9         | 14    | 9      | 21    |
| Cambridge,* | Emporium.              | 1,184                             | 30.006                          | 30.272   | 29.646  | 15           | 92       | 15       | 45      | 9                | 82.6  | 45           | 14    | 10     | 19    |
| Carbon.*    | Mauch Chunk (27 days). | 1,030                             |                                 |          |         | 14           | 94       | 14       | 39      | 28               | 82.6  | 53.2         | 14    | 10     | 19    |
| Centre.     | State College.         | 1,191                             | 29.931                          | 30.271   | 29.618  | 15           | 95       | 15       | 40      | 8                | 81.3  | 54.1         | 14    | 7      | 19    |
| Chester,*   | West Chester.          | 455                               | 29.967                          | 30.218   | 29.763  | 16           | 95       | 16       | 46      | 8                | 77.8  | 56.1         | 23    | 8      | 21    |
| Chester.    | Chester.               | 380                               |                                 |          |         | 16           | 95       | 16       | 39      | 8                | 89.8  | 69.8         | 8     | 25     | 7     |
| Chester.    | Kennett Square.        | 275                               | 29.983                          | 30.236   | 29.740  | 16           | 94       | 16       | 42      | 7                | 82.1  | 56.2         | 15    | 8      | 19    |
| Chester.    | Phoenixville.          | 183                               | 30.003                          | 30.223   | 29.732  | 17           | 94       | 17       | 42      | 8                | 81.9  | 57.8         | 15    | 20     | 20    |
| Chester.    | Westtown.              | 350                               | 30.003                          | 30.223   | 29.732  | 17           | 94       | 17       | 42      | 8                | 79.7  | 59.4         | 20    | 3      | 12    |
| Clarion.    | Rimersburg.            | 1,500                             |                                 |          |         | 15           | 81       | 15       | 48      | 5, 7             | 77.6  | 62.2         | 13    | 5      | 16    |
| Clarion.    | Clarion.               | 1,560                             |                                 |          |         |              |          |          |         |                  |       | 36           | 8     | 7      | 16    |
| Clarion.    | Grampian Hills.        | 1,560                             |                                 |          |         | 14           | 97       | 14       | 46      | 7                | 70.7  | 60.1         | 19    | 9      | 17    |
| Clarion.    | Cock Haven.            | 491                               | 29.980                          | 30.272   | 29.646  | 15           | 97       | 15       | 42      | 8                | 81.3  | 55.4         | 14    | 6      | 17    |
| Clinton.    | Clinton.               | 491                               |                                 |          |         |              |          |          |         |                  |       |              |       |        |       |
| Columbia.   | Conowingo.             | 1,300                             |                                 |          |         | 16           | 87       | 16       | 40      | 5                | 77    | 55.1         | 21.9  | 6      | 6     |
| Cumberland. | Carlisle.              | 480                               |                                 |          |         | 17           | 97       | 17       | 41      | 8                | 82.7  | 57.8         | 24.9  | 8      | 19    |
| Dauphin.*   | Harrisburg.            | 361                               | 29.985                          | 30.261   | 29.731  | 15           | 93       | 15       | 43      | 8                | 79.8  | 50.1         | 19.7  | 8      | 18    |
| Delaware.   | Swarthmore College.    | 190                               |                                 |          |         | 26           | 92       | 26       | 44      | 10               | 80.4  | 58.4         | 22    | 5      | 19    |
| Erie.*      | Erie.                  | 681                               | 29.960                          | 30.240   | 29.690  | 15           | 95       | 15       | 44      | 5                | 73    | 59           | 14    | 29     | 29    |
| Fayette.    | Uniontown.             | 1,000                             |                                 |          |         | 17           | 91       | 17       | 48      | 28               | 71.9  | 61.9         | 10    | 8      | 7     |
| Franklin.*  | Franklin.              | 618                               |                                 |          |         |              |          |          |         |                  |       |              |       |        |       |
| Fulton.     | McConnellsburg.        | 875                               |                                 |          |         | 15, 16       | 94       | 15, 16   | 42      | 9                | 81.9  | 56.9         | 25    | 5      | 7     |

\* Observations taken at 12 noon.

\* Observations taken at 8 a. m. and 8 p. m.

| Huntingdon,*   | Indiana. | Huntingdon,   | 650   | 68.6 | 96 | 15 | 40 | 9  | 81.6 | 55.7 | 25.9 | 40 | 9  | 7  | 7  |
|----------------|----------|---------------|-------|------|----|----|----|----|------|------|------|----|----|----|----|
| Indiana.       | 1,350    | Indiana.      | 650   | 68.6 | 96 | 15 | 40 | 9  | 81.6 | 55.7 | 25.9 | 40 | 9  | 7  | 7  |
| Lancaster.     | 413      | Lancaster.    | 413   | 72.8 | 94 | 15 | 34 | 12 | 81.8 | 54.5 | 27.3 | 43 | 12 | 38 | 3  |
| Lawrence.      | 982      | New Castle.   | 474   | 68.3 | 95 | 16 | 40 | 8  | 81.5 | 55.7 | 25.8 | 39 | 25 | 8  | 7  |
| Lebanon.       | 474      | Lebanon.      | 474   | 69.3 | 95 | 16 | 40 | 8  | 80.2 | 58.1 | 22.1 | 30 | 14 | 30 | 6  |
| Letcher.       | 520      | Corpsburg.    | 1,655 | 69.3 | 95 | 16 | 40 | 8  | 80.2 | 58.1 | 22.1 | 30 | 14 | 30 | 6  |
| Luzerne.*      | 575      | Wilton.       | 1,655 | 70   | 98 | 15 | 43 | 6  | 83.6 | 56.5 | 27.1 | 40 | 14 | 7  | 21 |
| Lycoming.*     | 575      | White-Barre.  | 1,655 | 70   | 98 | 15 | 43 | 6  | 83.6 | 56.5 | 27.1 | 40 | 14 | 7  | 21 |
| McKean.        | 1,500    | Smethport.    | 1,500 | 68.3 | 94 | 15 | 48 | 25 | 73.6 | 51.6 | 20   | 44 | 25 | 6  | 4  |
| Mercer.*       | 1,500    | Greenville.   | 1,500 | 69.6 | 92 | 15 | 35 | 3  | 73.8 | 56   | 23.8 | 38 | 13 | 10 | 7  |
| Montgomery.    | 1,000    | Pottstown.    | 1,000 | 72   | 99 | 16 | 47 | 8  | 83.8 | 60.7 | 25.1 | 33 | 8  | 5  | 18 |
| Northampton.   | 350      | Gettysburg.   | 350   | 71.8 | 96 | 17 | 49 | 7  | 81.8 | 61.8 | 20   | 28 | 8  | 6  | 18 |
| Philadelphia.* | 117      | Bethlehem.    | 117   | 73.4 | 96 | 16 | 48 | 8  | 83.1 | 61.7 | 21.4 | 30 | 8  | 6  | 19 |
| Philadelphia.  | 120      | Philadelphia. | 120   | 72.4 | 96 | 16 | 48 | 8  | 83.1 | 61.7 | 21.4 | 30 | 8  | 6  | 19 |
| Scraper.       | 1,000    | Girardville.  | 1,000 | 67.2 | 92 | 15 | 16 | 8  | 78.9 | 55.3 | 23.6 | 35 | 14 | 9  | 19 |
| Snyder.        | 445      | Selinsgrove.  | 2,250 | 69.6 | 99 | 16 | 30 | 7  | 81   | 42.8 | 38.2 | 52 | 3  | 27 | 4  |
| South-et.      | 2,250    | Shillington.  | 2,250 | 66.7 | 99 | 15 | 42 | 9  | 80.4 | 53.7 | 26.7 | 43 | 28 | 13 | 7  |
| Swanton.       | 1,410    | St. Albans.   | 1,410 | 61.3 | 92 | 15 | 32 | 8  | 72.2 | 49.1 | 23.1 | 40 | 8  | 10 | 19 |
| Toga.          | 1,410    | Wellsburg.    | 1,410 | 61.3 | 92 | 15 | 32 | 8  | 72.2 | 49.1 | 23.1 | 40 | 8  | 10 | 19 |
| Union.         | 1,410    | Lewistown.    | 1,410 | 65.5 | 92 | 15 | 32 | 5  | 84.7 | 57.3 | 27.4 | 43 | 29 | 8  | 7  |
| Washington.    | 1,410    | Columbus.     | 1,410 | 65.5 | 92 | 15 | 32 | 5  | 84.7 | 57.3 | 27.4 | 43 | 29 | 8  | 7  |
| Wayne.         | 1,100    | Canonsburg.   | 1,100 | 63.7 | 93 | 16 | 33 | 8  | 77.9 | 49.8 | 28.1 | 44 | 8  | 8  | 21 |
| Wayne.         | 1,100    | Dyberry.      | 1,100 | 63.7 | 93 | 16 | 33 | 8  | 77.9 | 49.8 | 28.1 | 44 | 8  | 8  | 21 |
| Westmoreland.  | 1,750    | Honesdale.    | 1,750 | 70.9 | 92 | 15 | 40 | 28 | 82.5 | 53.9 | 28.6 | 44 | 28 | 9  | 5  |
| Wyoming.*      | 660      | Ligonier.     | 660   | 65.2 | 92 | 15 | 42 | 6  | 77.8 | 54.6 | 23.2 | 36 | 14 | 3  | 21 |
| York.          | 385      | South Eaton   | 385   | 69.8 | 96 | 16 | 42 | 8  | 82.6 | 57   | 25.6 | 38 | 29 | 11 | 19 |
| Delaware.      | 385      | Boothwyn.     | 385   | 71.3 | 95 | 17 | 53 | 7  | 81.7 | 56.1 | 25.6 | 36 | 8  | 8  | 19 |

\* Observations taken at 8 a. m. and 8 p. m.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.     | STATION.               | Relative humidity. | Dew point. | PRECIPITATION. |            |                       | NUMBER OF DAYS |       |         | WIND.                 |         |         |
|-------------|------------------------|--------------------|------------|----------------|------------|-----------------------|----------------|-------|---------|-----------------------|---------|---------|
|             |                        |                    |            | Total inches.  | Snow fall. | Number of rainy days. | Clear.         | Fair. | Cloudy. | PREVAILING DIRECTION. |         |         |
|             |                        |                    |            |                |            |                       |                |       |         | 7 a. m.               | 2 p. m. | 9 p. m. |
| Allegheny.* | Pittsburgh.            | 68.8               | 60         | 3.90           |            | 10                    | 11             | 7     | 12      | NW                    |         | NW      |
| Bedford.    | Charlesville.          | 84                 | 64         | 4.42           |            | 12                    | 12             | 6     | 12      | N                     | N       | NW      |
| Berks.      | Ramberg.               |                    |            | 2.23           |            | 8                     | 10             | 13    | 7       | NW                    |         | NW      |
| Berkshire.  | Reynolds.              |                    |            |                |            |                       |                |       |         |                       |         |         |
| Blair.      | Altoona.               |                    |            |                |            |                       |                |       |         |                       |         |         |
| Blair.      | Blue Knob.             |                    |            | 6.73           |            | 11                    |                |       |         |                       |         |         |
| Blair.      | Holidaysburg.          |                    |            | 4.90           |            | 12                    | 11             | 9     | 10      | SW                    | NW      | NW      |
| Bradford.   | Wysox.                 | 76                 | 61         | 4.90           |            | 12                    | 16             | 5     | 9       | SE                    | W       | E       |
| Bradford.   | Le Roy.                | 76.1               | 57.5       | 3.43           |            | 11                    | 14             | 6     | 10      | SE                    | SE      | SE      |
| Bucks.      | Forks of Neshaminy.    |                    |            | 4.75           |            | 11                    | 13             | 8     | 9       | SW                    | SW      | SW      |
| Bucks.      | Quakertown.            | 75.1               | 59.1       | 4.71           |            | 11                    | 13             | 12    | 5       | SW                    | SW      | SW      |
| Cambria.*   | Johnstown.             | 86.5               | 62.3       | 9.22           |            | 14                    | 8              | 10    | 12      | NW                    | NW      | NW      |
| Cameron.    | Emporium.              |                    |            | 4.45           |            | 12                    | 15             | 8     | 9       | NW                    | NW      | NW      |
| Carbon.     | Mauch Chunk (27 days). |                    |            | 4.36           |            | 11                    | 16             | 9     | 5       | NW                    | NW      | NW      |
| Chester.    | Mt. Airy College.      | 73.7               | 57.7       | 4.24           |            | 14                    | 10             | 12    | 8       | W                     | W       | W       |
| Chester.*   | W. Chester.            | 72                 | 59         | 4.17           |            | 13                    | 20             | 4     | 9       | NW                    | NW      | S       |
| Chester.    | Coatesville.           |                    |            | 3.60           |            | 12                    | 14             | 9     | 7       | W                     | W       | W       |
| Chester.    | Kennett Square.        |                    |            | 2.78           |            | 10                    | 16             | 7     | 7       | NW                    | NW      | SE      |
| Chester.    | Phoenixville.          | 76.8               | 61.8       | 2.19           |            | 13                    | 19             | 4     | 7       | NW                    | NW      | SW      |
| Chester.    | Westtown.              |                    |            | 4.52           |            | 7                     | 14             | 8     | 8       | W                     | W       | W       |
| Clarion.    | Rimersburg.            |                    |            |                |            |                       |                | 9     | 7       | W                     | W       | W       |
| Clarion.    | Clarion.               |                    |            |                |            |                       |                |       |         |                       |         |         |
| Clearfield. | Grampian Hills.        |                    |            | 8.71           |            | 13                    | 10             | 10    | 10      | E                     | W       | E       |
| Clinton.    | Lock Haven.            |                    |            | 4.35           |            | 13                    | 11             | 10    | 9       | W                     | W       | W       |
| Columbia.   | Catawissa.             |                    |            |                |            |                       |                |       |         |                       |         |         |
| Crawford.   | Meadville.             |                    |            | 3.86           |            | 10                    | 16             | 7     | 7       | S                     | W       | N       |
| Cumberland. | Carlisle.              | 82                 | 59.5       | 3.46           |            | 13                    | 9              | 13    | 8       | E                     | W       | W       |
| Dauphin.*   | Harrisburg.            | 83.7               | 64.2       | 3.76           |            | 12                    | 14             | 9     | 6       | W                     | W       | W       |
| Delaware.   | Harrisburg College.    | 70.2               | 58.9       | 9.30           |            |                       |                |       |         |                       |         |         |
| Elk.*       | Swatara.               |                    |            |                |            |                       |                |       |         |                       |         |         |
| Fayette.    | Uniontown.             | 71                 | 57         | 1.22           |            | 8                     | 11             | 5     | 14      | W                     | W       | W       |
| Franklin.*  | Chambersburg.          |                    |            | 8.63           |            | 11                    | 15             | 9     | 6       | SW                    | SW      | SW      |
| Fulton.     | McConnellsburg.        | 73.3               | 60.9       | 6.23           |            | 13                    | 10             | 13    | 7       | W                     | W       | W       |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.



|                |                              |      |    |    |    |    |    |
|----------------|------------------------------|------|----|----|----|----|----|
| Huntingdon,*   | Huntingdon,                  | 4 15 | 21 | 3  | 6  | W  | W  |
| Indiana,       | Indiana,                     |      |    |    |    |    |    |
| Lancaster,     | Lancaster,                   |      |    |    |    |    |    |
| Lawrence,      | New Castle,                  | 3.02 | 10 | 7  | 13 | E  | E  |
| Lebanon,       | Lebanon,                     | 3.40 | 11 | 13 | 7  | SW | SW |
| Lebanon,       | Coopersburg,                 | 2.33 | 12 | 15 | 9  | SW | NE |
| Luverne,*      | Writton,                     |      |    |    |    |    |    |
| Lycoming,*     | White-Barre,                 | 2.88 | 12 | 19 | 1  | W  | W  |
| McKean,        | Nabes,                       |      |    |    |    |    |    |
| Merced,*       | Smithport,                   | 5.66 | 3  | 15 | 6  | W  | W  |
| Montgomery,    | Greenville,                  | 6.72 | 12 | 11 | 9  | S  | S  |
| Northampton,   | Pottstown,                   | 4.20 | 7  | 20 | 5  | W  | W  |
| Philadelphia,* | Bedlehem,                    |      |    |    |    |    |    |
| Philadelphia,  | Philadelphia Weather Bureau, | 2.51 | 7  | 15 | 7  | SW | W  |
| Schuylkill,    | Philadelphia,                | 3.45 | 8  | 14 | 9  | NW | W  |
| Snyder,        | Girardville,                 | 3.70 | 10 | 23 | 4  | W  | W  |
| Soudert,       | Selinsgrove,                 | 4.74 | 2  | 14 | 7  | SW | W  |
| Sullivan,      | Somersel,                    | 5.20 | 10 | 8  | 15 | SW | W  |
| Tioga,         | Madison,                     |      |    |    |    |    |    |
| Union,*        | Wellsburg,                   | 4.07 | 13 | 10 | 10 | NW | W  |
| Warren,        | Lewisburg,                   | 3.53 | 9  | 16 | 8  | W  | W  |
| Washington,    | Columbus,                    | 3.53 | 11 | 14 | 7  | NE | SW |
| Wayne,         | Canonsburg,                  |      |    |    |    |    |    |
| Westmoreland,  | Dyberry,                     | 1.85 | 10 | 16 | 8  | NW | NW |
| Wyoming,*      | Honesdale,                   | 1.45 | 9  | 17 | 9  |    |    |
| York,          | Ligonier,                    | 8.27 | 8  | 17 | 14 | NW | NW |
| Delaware,      | South Eaton,                 | 2.17 | 9  | 18 | 5  | NW | NW |
|                | York,                        | 3.98 | 13 | 14 | 9  | NW | SW |
|                | Boothwyn,                    | 5.38 | 8  | 17 | 7  | E  | SW |

\* Observations taken at 8 a. m. and 8 p. m.

## PRECIPITATION FOR JUNE, 1891.

|    | Altoona. | Bethlehem. | Blue Knob. | Boothwyn. | Brower's Lock. | Canonsburg. | Carlisle. | Catawissa. | Chambersburg. | Charlottesville. | Clarton. | Coatesville. | Columbus. | Coopersburg. | Doylestown. | Drifton. | Dyberry. | Eagle's Mere. | Emporium. | Erle. | Forks of Neshaunmy. | Frederick. | Girardville. |
|----|----------|------------|------------|-----------|----------------|-------------|-----------|------------|---------------|------------------|----------|--------------|-----------|--------------|-------------|----------|----------|---------------|-----------|-------|---------------------|------------|--------------|
| 1  |          |            |            |           |                |             | .09       |            |               | .18              |          | .02          | .10       | .17          | .07         |          | .18      |               | .48       | .08   | .03                 | .05        | .92          |
| 2  |          |            | .50        | 2.02      |                |             | .08       |            |               | .45              | .42      | .15          | .15       | .25          | .13         |          | .03      |               |           | .14   | .02                 | .15        |              |
| 3  |          |            | .40        | .05       | .19            |             | .11       |            |               | .14              | .05      | .02          | .02       | .02          | .02         |          | .03      |               |           | .01   | .02                 | .32        |              |
| 4  |          |            | .30        |           |                |             | .03       |            |               | .27              | .03      | .02          | .03       | .02          | .02         |          | .06      |               | .02       | .01   | .02                 | 1.00       | .32          |
| 5  |          |            | 1.40       |           | 1.04           |             | 1.00      |            |               | .88              | 1.25     | .07          | .07       | .85          | .98         |          |          |               | .02       | .01   | .98                 |            | .50          |
| 6  |          |            |            |           |                |             | .18       |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 7  |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 8  |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 9  |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               | .20       |       |                     |            |              |
| 10 |          |            | .20        |           |                |             | .33       |            |               | .38              |          | .2           |           |              |             |          |          |               | .10       | .08   |                     |            | .13          |
| 11 |          |            | .40        |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 12 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 13 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 14 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 15 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 16 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               | .10       |       |                     |            | .80          |
| 17 |          |            | .10        | 1.34      |                |             | .27       |            |               | .68              | .34      | .44          | .44       | .14          | .76         |          | .74      |               | .10       |       | .24                 | 1.28       | .02          |
| 18 |          |            | .50        | .33       | .35            |             | .45       |            |               | .42              | .18      | .37          | .38       | .12          | .12         |          | .14      |               | 1.27      | .05   | .75                 | .56        | .06          |
| 19 |          |            | .80        | .13       | .19            |             | .05       |            |               | .10              | .10      | .07          | .06       | .11          | .17         |          | .10      |               | .11       | .20   | .02                 | .32        |              |
| 20 |          |            | .40        | .10       |                |             | .10       |            |               | .46              | .01      | .01          | .01       | .01          | .45         |          | .09      |               | .23       | .70   | .41                 |            | .38          |
| 21 |          |            | 1.00       | 1.10      | .78            |             | .25       |            |               | .25              | .70      | .78          | .03       | .03          | .45         |          | .35      |               | .53       |       |                     | .55        | .38          |
| 22 |          |            |            |           |                |             | .4        |            |               | .25              |          | .01          | .01       | .03          |             |          |          |               | .12       |       |                     |            | .43          |
| 23 |          |            |            |           |                |             | .02       |            |               |                  |          |              |           | .10          |             |          |          |               |           |       |                     |            |              |
| 24 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 25 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 26 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 27 |          |            | .20        |           | .12            |             | .66       |            |               |                  | .23      |              |           |              |             |          | .04      |               |           |       | .02                 |            | .34          |
| 28 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 29 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               | .06       |       |                     |            |              |
| 30 |          |            | .02        |           |                |             |           |            |               | .05              |          |              |           |              |             |          |          |               |           |       |                     |            |              |
| 31 |          |            |            |           |                |             |           |            |               |                  |          |              |           |              |             |          |          |               |           |       |                     |            |              |
|    | 7.73     |            | 6.20       | 5.83      | 2.67           |             | 3.46      |            |               | 4.42             |          | 3.60         | 3.80      | 2.33         | 3.66        |          | 1.85     |               | 4.45      | 1.22  | 1.64                | 3.83       | 3.70         |

\* Weather bureau stations.

## PRECIPITATION FOR JUNE, 1891—Continued.

|    | Gramplan Hills. | Greenville. | Hamburg. | Harrisburg.* | Hollidayburg. | Honesdale. | Huntingdon. | Indiana. | Johnstown. | Kennett Square. | Lancaster. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Ligonier. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Nisbet. | Ottisville. |
|----|-----------------|-------------|----------|--------------|---------------|------------|-------------|----------|------------|-----------------|------------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|---------|-------------|
| 1  |                 | .39         |          |              |               |            |             |          |            |                 |            |           |          |         | .98        | .36       | .36         | .12          | .12        |                 |             | .36     | .17         |
| 2  |                 | .61         | .22      | .40          | .12           |            | .33         |          | .27        | .41             |            | .80       | .07      | .12     | .01        | .22       | .01         | .59          | .94        | .42             | .94         | .45     | .02         |
| 3  |                 | .47         |          |              |               |            | .12         |          | .25        | .05             |            |           | .25      |         | .01        |           |             | .04          | .08        | .08             |             |         | .05         |
| 4  |                 | .44         |          |              |               |            | .03         |          | .25        | .05             |            |           | .03      |         |            |           |             |              |            | .46             | .02         |         | .86         |
| 5  |                 |             |          | .43          | .21           |            |             |          | .46        | .07             |            |           | .04      |         |            |           | .18         | 1.26         | .12        | .16             | .34         |         |             |
| 6  |                 | .12         | .97      | .06          | 1.16          | 1.22       | 1.22        | 1.19     | 1.04       | 1.04            |            | .90       | 1.11     | .46     | 1.00       | 1.80      | .95         |              |            | 1.65            |             |         |             |
| 7  |                 | .20         |          | .50          |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 8  |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 9  |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 10 |                 |             |          |              |               |            |             |          | .01        |                 |            |           |          |         | .76        | 2.20      | .80         | .36          | .36        |                 | .25         | .15     | .25         |
| 11 |                 | .15         |          |              | .05           |            |             |          | .34        |                 |            |           |          | .20     |            | 1.05      |             |              |            | .43             |             | .30     |             |
| 12 |                 | .05         |          | .06          |               |            | .42         |          |            |                 |            |           |          | .14     |            |           |             |              |            |                 |             |         |             |
| 13 |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 14 |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 15 |                 | .02         |          |              | .30           |            |             |          | .13        |                 |            |           |          | .46     | .10        |           | .43         | .10          |            |                 | .24         |         | .28         |
| 16 |                 | .03         |          |              | .05           |            |             |          | .48        |                 |            | .38       | .08      |         | .55        | .90       |             |              |            |                 |             |         |             |
| 17 |                 | .65         |          | .04          | .23           |            |             |          | .30        | .33             |            |           |          | .81     | .10        |           | .21         | .36          | .10        | .92             | .40         | .50     | .16         |
| 18 |                 | .75         |          | .58          | .39           |            | .26         |          | .30        |                 |            |           |          | .08     | .30        |           | .08         | .33          | .35        | .14             |             | .81     | .16         |
| 19 |                 | .25         |          |              |               |            | .08         |          | 1.21       | .49             |            | .41       | .05      | .19     |            |           | .20         | .70          | .96        | .12             | .15         | .10     | .01         |
| 20 |                 | .04         |          | .02          | .51           |            |             |          | .38        | .02             |            |           | .23      |         | .06        |           | .30         | .03          |            | .12             | .33         | .15     | .37         |
| 21 |                 | .08         |          |              |               |            | 1.04        |          | 1.38       |                 |            | .40       | .63      | 1.15    | .68        | 1.81      | 1.20        | 1.23         | .42        | .40             | .41         | .10     | .02         |
| 22 |                 | .36         |          | 1.19         |               |            |             |          | 1.05       | .10             |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 23 |                 | .13         |          | .09          | .01           |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 24 |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 25 |                 |             |          |              |               |            |             |          |            | .38             |            |           | .44      | .11     | .83        |           | .02         | .02          |            |                 |             |         |             |
| 26 |                 |             | .06      | .78          |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 27 |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 28 |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 29 |                 |             |          |              |               |            |             |          | 2.50       |                 |            |           |          |         |            |           |             |              |            | .15             |             |         |             |
| 30 |                 |             |          |              | .39           |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
| 31 |                 |             |          |              |               |            |             |          |            |                 |            |           |          |         |            |           |             |              |            |                 |             |         |             |
|    |                 | 8.71        | 6.72     | 2.23         | 3.76          | 4.91       | 4.15        | 9.22     | 2.88       | 2.90            | 3.40       | 4.75      | 5.21     | 8.27    | 4.35       | 4.35      | 3.86        | 3.95         | 6.28       | 3.02            | 5.66        | 2.81    |             |

\* Weather bureau stations.

## PRECIPITATION FOR JUNE, 1891—Continued.

|     | Philadelphia.* | Philadelphia. | Phoenixville. | Pittsburgh.* | Point Pleasant. | Pottstown. | Quakertown. | Reading. | Selsholtzville. | Sellinsgrove. | Smith's Corner. | Somerset. | South Katon. | State College. | Swarthmore. | Uniontown. | Wellsboro'. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. |
|-----|----------------|---------------|---------------|--------------|-----------------|------------|-------------|----------|-----------------|---------------|-----------------|-----------|--------------|----------------|-------------|------------|-------------|---------------|-----------|---------------|--------|-------|
| 1.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 2.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 3.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 4.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 5.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 6.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 7.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 8.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 9.  |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 10. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 11. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 12. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 13. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 14. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 15. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 16. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 17. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 18. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 19. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 20. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 21. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 22. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 23. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 24. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 25. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 26. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 27. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 28. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 29. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 30. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
| 31. |                |               |               |              |                 |            |             |          |                 |               |                 |           |              |                |             |            |             |               |           |               |        |       |
|     | 2.51           | 3.45          | 3.19          | 3.90         | 3.51            | 4.20       | 4.71        | 2.37     | 8.39            | 4.74          | 2.48            | 5.20      | 2.17         | 4.24           | 9.30        | 8.63       | 4.07        | 4.17          | 4.52      | 2.88          | 3.48   | 3.90  |

\* Weather bureau stations.

For July, 1891.

*Temperature.*

The mean temperature of forty-six stations for July, 1891, was  $67^{\circ}.9$ , which is about  $4^{\circ}.4$  below the normal, and  $2^{\circ}.9$  below the corresponding month in 1890.

The mean of the daily maximum and minimum temperatures,  $78^{\circ}.6$  and  $56^{\circ}.6$ , gives an average daily range of  $22^{\circ}.0$  and a monthly mean of  $67^{\circ}.8$ .

Highest monthly mean,  $72^{\circ}.4$  at Philadelphia (Centennial Avenue).

Lowest monthly mean,  $63^{\circ}.0$  at Dyberry.

Highest temperature recorded during the month,  $97^{\circ}$  on the 14th at Huntingdon and on the 15th at Wilkes-Barre.

Lowest temperature,  $34^{\circ}$  on the 10th at Wellsboro' and on the 27th at Columbus.

Greatest local monthly range,  $53^{\circ}$  at Huntingdon.

Least local monthly range,  $32^{\circ}$  at Swarthmore.

Greatest daily range,  $48^{\circ}$  at Hollidaysburg on the 13th.

Least daily range,  $3^{\circ}$  at Philadelphia on the 8th.

From January 1, 1891, to July 31, 1891, the excess in temperature at Philadelphia was  $143^{\circ}$ , at Erie  $74^{\circ}$ , and at Pittsburgh  $116^{\circ}$ .

*Barometer.*

The mean pressure for the month, 30.03, is about .07 above the normal. At the United States weather bureau stations the highest observed was 30.36 at Philadelphia on the 22d, and the lowest 29.73 at Harrisburg on the 3d.

*Precipitation.*

The average rainfall, 6.32 for the month, is an excess of about two inches.

The fall was particularly excessive in the southeastern portion of the state.

The largest monthly totals in inches were Coatesville, 11.61; York, 10.77; Kennett Square, 10.21, and West Chester, 10.11.

The least were Wysox, 2.63, and Erie, 2.66.

*Wind and Weather.*

The prevailing direction of the wind was from the west. The month was characterized by extremes of heat and cold.

Average number: Rainy days, 13; clear days, 11; fair days, 10; cloudy days, 10.



MONTHLY SUMMARY OF REPORTS by *Voluntary Observers of the Pennsylvania State Weather Service for July, 1891.*

| COUNTY.        | STATION.              | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL. |          |         |       | TEMPERATURE. |          |          |       |                  |                  |       |           |        |       |
|----------------|-----------------------|-----------------------------------|---------------------------------|----------|---------|-------|--------------|----------|----------|-------|------------------|------------------|-------|-----------|--------|-------|
|                |                       |                                   | Mean.                           | Highest. | Lowest. | Mean. | MAXIMUM.     |          | MINIMUM. |       | Mean of maximum. | Mean of minimum. | Mean. | Greatest. | Least. | Date. |
|                |                       |                                   |                                 |          |         |       | Date.        | Highest. | Lowest.  | Date. |                  |                  |       |           |        |       |
| Allegheny,*    | Pittsburgh.           | 847                               | 30.040                          | 30.10    | 29.82   | 70    | 14           | 89       | 52       | 16    | 79.9             | 60.2             | 19.7  | 28        | 12     | 18    |
| Bedford.       | Charlestown.          | 1,300                             |                                 |          |         | 68.3  | 14           | 87       | 43       |       | 78.3             | 54.2             | 24.1  | 37        | 12     | 1     |
| Berkshire.     | Harrisburg.           | 380                               |                                 |          |         | 72.2  | 14           | 92       | 49       | 11    | 80.3             | 57.7             | 22.6  |           | 8      |       |
| Blair.         | Reading.              | 280                               |                                 |          |         | 70.7  |              | 90       | 42       | 10    | 80.8             | 60.6             | 20.2  | 35        | 12     | 23    |
| Blair.         | Altoona.              | 1,181                             |                                 |          |         | 65.9  | 13           | 89       | 50       | 9     | 76.5             | 56.9             | 16.5  | 18        | 12     | 18    |
| Blair.         | Blue Knob.            | 2,500                             |                                 |          |         | 67.9  | 14           | 92       | 42       | 28    | 82.1             | 54.7             | 27.4  | 48        | 13     | 1     |
| Blair.         | Holidaysburg.         | 947                               |                                 |          |         | 66.1  | 14           | 91       | 41       | 10    | 77.7             | 54.2             | 23.5  | 42        | 22     | 1.18  |
| Bradford.      | Wysox.                | 718                               | 30.040                          | 30.32    | 29.78   | 70.7  |              | 92       |          |       | 81.5             |                  |       |           |        |       |
| Bucks.         | Forks of Nesquehanna. | 1,184                             | 30.063                          | 30.35    | 29.88   | 68.5  | 14           | 92       |          |       |                  |                  |       |           |        |       |
| Cameron.       | Johnstown.            | 1,090                             |                                 |          |         | 68.9  | 10           | 89       | 46       | 11    | 76               | 53               | 26    | 30        | 12     | 30    |
| Carbon.*       | Emporium.             | 1,450                             |                                 |          |         | 65.4  | 14           | 86       | 47       | 10    | 75.2             | 61.1             | 17.1  | 27        | 12     | 0     |
| Centre.        | Mauch Chunk.          | 1,191                             | 29.460                          | 30.29    | 29.69   | 65.4  | 14           | 87       | 46       | 9     | 78.2             | 61.1             | 17.1  | 27        | 12     | 0     |
| Chester.*      | Mate College.         | 453                               | 30.033                          | 30.34    | 29.77   | 71.5  | 15           | 90       | 49       | 11    | 80.3             | 58.2             | 22.1  | 34        | 12     | 2     |
| Chester.       | West Chester.         | 380                               |                                 |          |         | 71.5  | 15           | 90       | 49       | 11    | 80.3             | 58.2             | 22.1  | 34        | 12     | 2     |
| Chester.       | Coxsack.              | 275                               |                                 |          |         | 71.5  | 15           | 90       | 49       | 11    | 80.3             | 58.2             | 22.1  | 34        | 12     | 2     |
| Chester.       | Kennett Square.       | 380                               |                                 |          |         | 71.5  | 15           | 90       | 49       | 11    | 80.3             | 58.2             | 22.1  | 34        | 12     | 2     |
| Chester.       | Phoenixville.         | 183                               | 30.040                          | 30.35    | 29.97   | 70.8  | 14           | 87       | 58       | 7     | 79.6             | 60.5             | 19    | 31        | 7      | 30    |
| Chester.       | Westtown.             | 350                               |                                 |          |         | 70.8  | 14           | 87       |          |       |                  |                  |       |           |        |       |
| Clarion.       | Rimersburg.           | 1,500                             |                                 |          |         | 63.4  | 14           | 90       | 46       | 10    | 75.5             | 57.7             | 17.8  | 30        | 10     | 30    |
| Clearfield.    | Grampian Hills.       | 1,450                             | 29.94                           | 30.21    | 29.71   | 63.4  | 14           | 90       | 46       | 10    | 75.5             | 57.7             | 17.8  | 30        | 10     | 30    |
| Crawford.      | Meadville.            | 1,300                             | 29.97                           | 30.26    | 29.76   | 67.6  | 14           | 86       | 44       | 39    | 76.1             | 51.6             | 24.5  | 43        | 12     | 18    |
| Cumberland.    | Carlisle.             | 480                               |                                 |          |         | 68.6  | 14           | 93       | 50       | 10    | 81.3             | 56.8             | 24.6  | 38        | 14     | 10    |
| Dauphin.*      | Carlisle.             | 361                               | 30.033                          | 30.34    | 29.74   | 68.6  | 14           | 93       | 50       | 10    | 81.3             | 56.8             | 24.6  | 38        | 14     | 10    |
| Delaware.      | Harrisburg College.   | 681                               | 30.000                          | 30.30    | 29.73   | 68.7  | 14           | 90       | 46       | 10    | 78.9             | 60.6             | 18.3  | 29        | 12     | 1     |
| Erie.*         | Swatara.              | 681                               | 30.000                          | 30.30    | 29.73   | 68.7  | 14           | 90       | 46       | 10    | 78.9             | 60.6             | 18.3  | 29        | 12     | 1     |
| Erie.*         | Uniontown.            | 875                               |                                 |          |         | 68.7  | 14           | 90       | 46       | 10    | 78.9             | 60.6             | 18.3  | 29        | 12     | 1     |
| Fayette.       | McConnellsburg.       | 1,000                             |                                 |          |         | 68.1  | 14           | 89       | 44       | 23    | 81.5             | 56.7             | 24.3  | 40        | 12     | 8     |
| Franklin.      | New Castle.           | 650                               |                                 |          |         | 67.9  | 14           | 89       | 44       | 19    | 81.5             | 56.7             | 24.3  | 40        | 12     | 8     |
| Huntingdon.    | Lebanon.              | 932                               |                                 |          |         | 67.9  | 14           | 89       | 44       | 19    | 81.5             | 56.7             | 24.3  | 40        | 12     | 8     |
| Lebanon.       | Lebanon.              | 474                               | 30.033                          | 30.32    | 29.78   | 68.1  | 14           | 89       | 44       | 19    | 81.5             | 56.7             | 24.3  | 40        | 12     | 8     |
| Lehigh.        | Coopersburg.          | 520                               |                                 |          |         | 68.1  | 14           | 89       | 44       | 19    | 81.5             | 56.7             | 24.3  | 40        | 12     | 8     |
| Luzerne.*      | Wilkes-Barre.         | 1,500                             |                                 |          |         | 68.1  | 15           | 88       | 52       | 11    | 77.8             | 53.5             | 18.3  | 32        | 12     | 18    |
| McKean.        | Smethport.            | 575                               |                                 |          |         | 68.1  | 15           | 88       | 52       | 11    | 77.8             | 53.5             | 18.3  | 32        | 12     | 18    |
| Montgomery.    | Pottstown.            | 150                               |                                 |          |         | 71.1  | 14           | 91       | 48       | 17    | 79.3             | 56.9             | 22.4  | 43        | 17     | 18    |
| Philadelphia.* | Weather Bureau.       | 117                               | 30.033                          | 30.35    | 29.77   | 71.9  | 15           | 91       | 53       | 11    | 81.5             | 61.4             | 20.1  | 34        | 12     | 2     |
| Philadelphia.  | Philadelphia.         | 120                               | 30.040                          | 30.30    | 29.78   | 72.4  | 15           | 91       | 54       | 9     | 81.4             | 63.2             | 18    | 28        | 12     | 2     |







## PRECIPITATION DURING JULY, 1891.

| DATE. | Altoona. | Blue Knob. | Brower's Lock. | Carlisle. | Charlottesville. | Columbus. | Coopersburg. | Doylestown. | Dyersburg. | Emporium. | Forks of Nesqueh. | Frederick. | Stratfordville. | Gramplan Hills. | Hannbury. | Harrisburg. | Hollidaysburg. |
|-------|----------|------------|----------------|-----------|------------------|-----------|--------------|-------------|------------|-----------|-------------------|------------|-----------------|-----------------|-----------|-------------|----------------|
| 1     | 1.30     | .17        |                | .06       | .70              | .55       | .40          | .84         | T          | 1.38      | .25               | .40        | .10             | .72             | .74       | .30         | 1.40           |
| 2     | .20      | .03        | .54            | 1.11      | .78              | .43       | .40          | .84         | .60        | .05       | .06               | .25        | 1.25            | .13             | .22       | 1.63        | .17            |
| 3     |          |            |                |           | 1.18             | .01       | .01          |             |            | .16       | .02               | .35        | 1.15            | .03             | .02       | .19         | .03            |
| 4     | .27      |            | 1.51           | .10       | .04              | .24       | .14          | .20         | T          | .04       |                   | .17        | .17             | .02             | .02       | T           |                |
| 5     |          |            |                |           | .12              |           |              |             |            |           |                   | T          |                 |                 |           |             |                |
| 6     |          | .14        |                | .07       | .07              | .76       | .13          | .50         | .50        | 1.00      | .78               | .09        | .64             | .52             | .11       | .46         | .35            |
| 7     | .03      |            |                | 1.00      | 1.85             | .10       | .66          | .85         | .10        |           |                   | .80        | .10             |                 | .64       | .80         |                |
| 8     | .35      |            | .50            | .02       |                  |           |              | .06         |            |           |                   | .03        |                 |                 |           |             |                |
| 9     |          |            | .16            |           |                  |           |              |             |            |           |                   |            |                 |                 |           |             |                |
| 10    |          |            |                |           |                  |           |              |             |            |           |                   |            |                 |                 |           |             |                |
| 11    |          |            |                |           |                  |           |              |             |            |           |                   |            | .08             | .05             |           | T           |                |
| 12    |          |            |                |           |                  |           |              |             |            |           |                   | .11        | .08             | .04             |           | T           |                |
| 13    |          |            |                |           | .15              | .41       | .40          | .35         | .02        | .64       | .12               | .28        |                 |                 |           |             |                |
| 14    | .04      |            | .25            | .13       | .64              | .13       | .40          | .22         |            |           | .01               |            |                 |                 |           |             |                |
| 15    |          |            |                |           |                  |           |              |             |            |           |                   |            |                 |                 |           |             |                |
| 16    |          |            |                |           |                  |           |              |             |            |           |                   |            |                 |                 |           |             |                |
| 17    |          |            |                |           |                  |           |              |             |            |           |                   |            |                 |                 |           |             |                |
| 18    | .23      | .04        |                | .33       | 2.26             | .08       | 1.64         | 1.00        | 1.05       | .64       | .14               | .36        | 2.48            | .79             | .58       | .54         | .57            |
| 19    | .15      | .01        | 2.55           | .03       |                  |           | .10          |             | T          |           | T                 |            | 1.48            | .13             | .73       | .56         | .60            |
| 20    |          |            |                | .80       |                  | .01       |              | .14         | T          |           |                   | .18        | .57             |                 | .17       | .08         |                |
| 21    |          |            |                |           |                  |           |              |             |            |           |                   | .01        |                 |                 |           |             |                |
| 22    |          | .01        |                | .46       | .36              | .45       | .10          |             | T          | 2.25      | .02               | .01        | 1.04            | 2.01            | .30       | .30         | .15            |
| 23    | .17      | .01        |                | .63       | 1.30             | .07       | .47          |             | .74        | .52       | .15               | .45        |                 | .13             | .16       | .16         |                |
| 24    | .08      | .01        | .65            |           | .04              |           | .65          | .43         |            |           | .36               | T          |                 | .08             |           | T           |                |
| 25    |          |            |                |           |                  |           |              |             |            | .08       |                   |            |                 |                 |           |             |                |
| 26    |          |            |                | 1.90      | .02              | .01       | .04          |             | T          |           |                   |            |                 |                 |           |             |                |
| 27    | .13      | .09        |                | .27       | .18              | .01       | .30          | .30         | .07        | .06       | .13               | .55        | .06             | .33             |           | .12         | .43            |
| 28    | .30      | .01        | 1.34           | 1.25      | 1.00             | .07       | 1.36         | 1.90        | .07        |           | .73               | 1.40       | .03             | .03             | .86       | .31         | .02            |
| 29    | .35      | .05        |                | .40       | .27              | .66       | .57          | .31         | .34        | 1.65      | .75               | .30        | .57             | .45             | .54       | 2.13        | .51            |
| 30    |          |            |                | .05       |                  |           |              |             |            |           |                   |            |                 |                 |           |             |                |
| 31    | .07      |            |                |           |                  |           |              |             |            |           |                   |            |                 |                 |           |             |                |
|       | 3.89     | .62        | 8.74           | 5.03      | 6.61             | 5.64      | 6.07         | 6.30        | 3.88       | 8.46      | 2.66              | 4.44       | 9.64            | 7.03            | 5.69      | 8.40        | 4.98           |

\*United States weather bureau station.



## PRECIPITATION DURING JULY, 1891—Continued.

| DATE. | Honesdale. | Huntingdon. | Johnstown. | Kennett Square. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Ligonier. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Ottaville. | Philadelphia.* | Philadelphia. | Phoenixville. | Pittsburgh. | Point Pleasant. |
|-------|------------|-------------|------------|-----------------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|------------|----------------|---------------|---------------|-------------|-----------------|
| 1.    |            | .38         | 1.06       | .42             | .11       | .03      | .55     | .10        | .55       | .80         | .44          | .36        | .86             | .10         | .27        | .14            | .15           | .50           | .69         | .21             |
| 2.    | .60        | .15         | .13        | .42             | .11       | 1.32     | .50     | .81        | .81       | .77         | .44          | .36        | .10             | .10         | .02        | .14            | .15           | .07           | .50         | .69             |
| 3.    | .34        | .15         | .36        | 1.66            | .70       | .26      | .11     | .04        | .07       | .07         | 1.50         | .35        | .10             | .07         | .22        | .54            | .35           | .14           | .63         | .21             |
| 4.    | .66        | .16         | .03        | .01             | .01       | T        | .01     | .06        | .49       | .06         | .06          | .01        | .01             | .01         | .02        | .54            | .35           | .14           | .63         | .21             |
| 5.    | .66        | .16         | .03        | .01             | .01       | T        | .01     | .06        | .49       | .06         | .06          | .01        | .01             | .01         | .02        | .54            | .35           | .14           | .63         | .21             |
| 6.    | .66        | .16         | .03        | .01             | .01       | T        | .01     | .06        | .49       | .06         | .06          | .01        | .01             | .01         | .02        | .54            | .35           | .14           | .63         | .21             |
| 7.    | .66        | .16         | .03        | .01             | .01       | T        | .01     | .06        | .49       | .06         | .06          | .01        | .01             | .01         | .02        | .54            | .35           | .14           | .63         | .21             |
| 8.    | .53        | .18         | 1.15       | 1.72            | .98       | .10      | .12     | .42        | 2.00      | .55         | .66          | .46        | .09             | .09         | .03        | .16            | .16           | .03           | 1.88        | .21             |
| 9.    | .28        | .28         | .40        | .27             | .20       | .01      | .12     | .42        | 2.00      | .55         | .66          | .46        | 1.74            | .14         | .02        | 1.12           | 1.35          | 1.03          | 1.88        | .21             |
| 10.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             | .02        | .21            | .24           | .02           | 1.88        | .21             |
| 11.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 12.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 13.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 14.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 15.   | .04        |             | .10        | .22             | .51       | T        | .05     | .03        | .09       | .12         |              | .06        |                 |             | .03        | .10            | .09           | .03           | .26         | .11             |
| 16.   |            |             |            | .11             | .38       | .54      | .05     | .03        | .09       | .12         |              | .06        |                 |             | .03        | .10            | .09           | .03           | .26         | .11             |
| 17.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             | .37        | .21            | .02           | .01           | .01         |                 |
| 18.   | .93        | .40         | 1.00       | 1.40            | 1.01      | 1.08     | .13     | .13        | 1.25      | 1.40        | .91          | .44        | 1.31            | .35         | 2.07       | .35            | .62           | .15           | 1.36        | .10             |
| 19.   | .18        | .25         | .03        | .07             | .07       | .37      | .15     | .37        |           |             | 1.25         |            | .04             | .04         | .12        | .03            | .04           | .10           | .06         | .15             |
| 20.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 21.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 22.   |            |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 23.   | .03        |             | .05        | .02             | .17       | T        | .05     | .10        | .06       | 1.57        | .47          | T          | T               |             |            |                |               | .03           | .43         | .46             |
| 24.   | 1.07       | .15         | 1.20       | .79             | .56       | .87      | .05     | 1.36       |           | 1.11        | 1.22         | .87        | 1.35            | .55         | .55        | .18            | .43           | .77           | .14         | .46             |
| 25.   | .08        | 1.00        | .03        | .86             | .15       | T        | .03     | .01        | .01       | .04         | .01          |            | .10             | .20         | .20        | .14            | .02           | .01           | .14         | .32             |
| 26.   | .05        |             | .05        |                 | .41       |          |         | .01        | .33       |             |              |            |                 |             |            |                |               |               | .10         |                 |
| 27.   | .09        |             | .05        |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 28.   | .02        | .05         | .25        | .40             | .40       | .21      | .10     | .20        | .23       | .26         |              |            | .34             | .04         | .39        | .04            | .12           | .07           | .23         | .41             |
| 29.   | .02        | .05         | .42        | 1.81            | 1.25      | 1.20     | .10     | .20        | .28       | .36         | .29          | .23        | .70             | .20         | 1.81       | 1.56           | 1.61          | .07           | 1.08        | .41             |
| 30.   | .61        |             | .34        | .93             | .18       | 1.17     | .50     | .45        |           |             |              |            | .12             | .05         | .05        | .35            | .24           | .44           | .57         | .63             |
| 31.   |            | 1.05        |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
|       | 4.70       | 4.49        | 6.81       | 10.21           | 6.36      | 8.70     | 7.05    | 5.09       | 5.95      | 6.95        | 7.08         | 2.77       | 6.32            |             | 8.28       | 4.65           | 5.89          | 8.36          | 7.65        | 6.34            |

\*United States weather bureau station.

## PRECIPITATION DURING JULY, 1891—Continued.

| DATE | Posttown. | Quakerstown. | Reading. | Rush Valley. | Seiboltzville. | Selinsgrove. | Smethport. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellsboro. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. |
|------|-----------|--------------|----------|--------------|----------------|--------------|------------|-----------------|-----------|--------------|----------------|-------------|------------|------------|---------------|-----------|---------------|--------|-------|
| 1    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 2    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 3    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 4    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 5    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 6    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 7    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 8    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 9    |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 10   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 11   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 12   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 13   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 14   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 15   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 16   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 17   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 18   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 19   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 20   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 21   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 22   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 23   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 24   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 25   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 26   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 27   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 28   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 29   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 30   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
| 31   |           |              |          |              |                |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |
|      | 8.91      | 7.29         | 7.35     | 7.75         | 6.69           | 7.45         | 4.68       | 4.88            | 5.65      | 5.75         | 3.45           | 10.11       | 6.28       | 2.63       | 10.77         |           |               |        |       |

For August, 1891.

*Temperature.*

The mean temperature of forty-six stations for August, 1891, was  $69^{\circ}.7$ , which is about  $0^{\circ}.7$  below the normal, and  $1^{\circ}.3$  above the corresponding month of 1890.

The mean of the daily maximum and minimum temperatures  $80^{\circ}.1$  and  $59^{\circ}.2$  give an average daily range of  $29^{\circ}.9$ , and a monthly mean of  $89^{\circ}.6$ .

Highest monthly mean,  $74^{\circ}.5$  at Philadelphia (Centennial avenue).

Lowest monthly mean,  $65^{\circ}.0$  at Wellsboro'.

Highest temperature recorded during the month,  $99^{\circ}.0$  on the 9th, at Charlesville, and on the 10th at Philadelphia, (Centennial avenue).

Lowest temperature,  $35^{\circ}$  on the 30th at Somerset.

Greatest local monthly range,  $59^{\circ}$  at Charlesville.

Least local monthly range,  $29^{\circ}$  at Kennett Square.

Greatest daily range,  $47^{\circ}$  at Girardville on the 14th.

Least daily range,  $4^{\circ}$  at Grampian Hills on the 23d, and at Coopersburg on the 5th.

From January 1, 1891, to August 31, 1891, the excess in temperature at Philadelphia was  $171^{\circ}$ , at Erie  $75^{\circ}$  and at Pittsburgh  $107^{\circ}$ .

The warmest period of the month was from the 9th to the 11th, inclusive. The coldest were the 29th and 30th.

Light frosts were reported in several of the elevated districts.

*Barometer.*

The mean pressure for the month, 30.00, is about .02 above the normal.

At the United States weather bureau stations, the highest observed was 30.24 at Harrisburg on the 6th, and at Philadelphia on the 26th. The lowest observed was 29.53 at Erie on the 21st.

*Precipitation.*

The average rainfall, 5.09 for the month, is an excess of about three-quarters of an inch.

The largest monthly totals were, in inches, Reading, 11.77; Smith's Corner, 10.18; Point Pleasant, 9.56; Girardville, 9.47; Lewisburg, 9.42, and West Chester, 8.85.

The smallest were New Castle, 1.43; Pittsburgh, 1.60, and Erie, 1.96.

Rains were of almost daily occurrence in some parts of the state. The heaviest occurred on the 23d and 24th.

*Wind and Weather.*

The prevailing wind was from the southwest.

Average number: Rainy days, 12; clear days, 8, fair days, 12; cloudy days, 11.

## MONTHLY SUMMARY OF REPORTS BY Voluntary Observers of the Pennsylvania State Weather Service for August, 1891.

| COUNTY.       | STATION.                          | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL. |          |         | TEMPERATURE. |           |          |        |                  |                  |       |              |       |        |       |
|---------------|-----------------------------------|-----------------------------------|---------------------------------|----------|---------|--------------|-----------|----------|--------|------------------|------------------|-------|--------------|-------|--------|-------|
|               |                                   |                                   | Mean.                           | Highest. | Lowest. | MAXIMUM.     |           | MINIMUM. |        | Mean of maximum. | Mean of minimum. | Mean. | DAILY RANGE. |       |        |       |
|               |                                   |                                   |                                 |          |         | Date.        | Highest.  | Lowest.  | Date.  |                  |                  |       | Greatest.    | Date. | Least. |       |
|               |                                   |                                   |                                 |          |         |              |           |          |        |                  |                  |       |              |       |        | Date. |
| Allegheny,*   | Pittsburgh.                       | 847                               | 30.01                           | 30.23    | 29.62   | 94           | 10        | 48       | 29     | 81               | 62.4             | 18.6  | 28           | 1     | 7      | 23    |
| Bedford,*     | Charlesville.                     | 1,300                             |                                 |          |         | 89           | 9         | 40       | 29     | 79.3             | 57.3             | 22    | 31           | 11.17 | 12     | 21    |
| Berks.        | Hamburg.                          | 380                               |                                 |          |         | 97           | 10        | 50       | 29     | 81.4             | 61.2             | 20.2  | 31           | 11.17 | 1      | 5     |
| Blair,*       | Altoona.                          | 1,181                             |                                 |          |         | 95           | 12        | 50       | 29     | 81.5             | 63.9             | 17.6  | 23           | 8.30  | 9      | 4     |
| Blair.        | Blue Knob.                        | 2,300                             |                                 |          |         |              |           |          |        |                  |                  |       |              |       |        |       |
| Bradford.     | Hollidaysburg.                    | 875                               |                                 |          |         | 94           | 10        | 39       | 29     | 83.3             | 54.5             | 28.8  | 38           |       | 16     | 4     |
| Bradford.     | Wysox.                            | 718                               |                                 |          |         | 93           | 11        | 42       | 3, 29  | 78.4             | 56.1             | 22.3  | 37           | 1.3   | 4      | 5     |
| Bucks.        | Le Roy.                           | 1,400                             |                                 |          |         | 90           | 11        | 47       | 29     | 76               | 60.9             | 15.1  | 24           | 1.3   | 6      | 4     |
| Bucks.        | Forks of Neshaminy (Rush Valley). |                                   |                                 |          |         |              |           |          |        |                  |                  |       |              |       |        |       |
| Bucks.        | Quakertown (20 days).             | 536                               |                                 |          |         |              |           |          |        |                  |                  |       |              |       |        |       |
| Cambria,*     | Johnstown.                        | 1,184                             |                                 |          |         | 94           | 9, 10, 11 | 43       | 29     | 82.1             | 58.2             | 23.9  | 37           |       | 7      | 23    |
| Cameron.      | Emporium.                         | 1,080                             |                                 |          |         | 92           | 9         | 43       | 29     | 79.9             | 56               | 23    | 36           | 1     | 11     | 21    |
| Carbon,*      | Mauch Chunk.                      | 1,550                             |                                 |          |         | 95           | 10, 11    | 46       | 1      | 79.8             | 58.8             | 21    | 34           | 1     | 5      | 30    |
| Centre.       | State College.                    | 1,191                             |                                 |          |         | 92           | 11        | 45       | 30     | 78.4             | 58.4             | 20    | 28           | 1     | 9      | 23    |
| Chester.      | West Chester.                     | 465                               |                                 |          |         | 92           | 10, 11    | 53       | 29, 30 | 79.5             | 64.9             | 14.6  | 22           | 17    | 6      | 18    |
| Chester.      | Coatesville.                      | 380                               |                                 |          |         | 97           | 11        | 51       | 1      | 82.4             | 62.1             | 20.3  | 34           | 17    | 8      | 3     |
| Chester.*     | Kennett Square.                   | 275                               |                                 |          |         | 85           | 10        | 56       | 30     |                  |                  |       |              |       |        |       |
| Chester.      | Phoenixville.                     | 1,183                             |                                 |          |         | 94           | 10        | 52       | 29     | 80.7             | 64.8             | 15.9  | 24           | 14    | 6      | 5     |
| Clearfield.   | Grampian Hills.                   | 1,450                             |                                 |          |         | 94           | 10        | 44       | 29     | 77.7             | 59.5             | 18.2  | 36           | 22    | 4      | 23    |
| Columbia.     | Lock Haven.                       | 1,500                             |                                 |          |         | 93           | 9, 10     | 45       | 29     |                  |                  |       |              |       |        |       |
| Columbia.     | Meadville.                        | 1,300                             |                                 |          |         | 93           | 9, 10     | 45       | 29     |                  |                  |       |              |       |        |       |
| Cumberland.   | Carlisle.                         | 480                               |                                 |          |         | 96           | 11        | 49       | 29     | 82.7             | 62.1             | 20.6  | 28           | 10.11 | 8      | 5     |
| Dauphin.*     | Harrisburg.                       | 351                               | 30.00                           | 30.24    | 29.74   | 92           | 10        | 54       | 30     | 80.2             | 64.2             | 16    | 24           | 17    | 6      | 5     |
| Delaware.     | Swarthmore College.               | 190                               |                                 |          |         | 95           | 10        | 52       | 30     |                  |                  |       |              |       |        |       |
| Erie.*        | Erie.                             | 681                               | 29.98                           | 30.21    | 29.53   | 89           | 9         | 51       | 29     | 75.7             | 61.3             | 14.4  | 22           | 16    | 7      | 28    |
| Fayette.      | Uniontown.                        | 1,000                             |                                 |          |         | 91           | 9, 10     | 44       | 29     | 80.6             | 60.5             | 20.1  | 27           | 8     | 21     | 23    |
| Fulton.       | McConnellsburg.                   | 875                               |                                 |          |         | 95           | 10        | 45       | 29     | 82.9             | 59.7             | 23.2  | 32           | 10    | 11     | 24    |
| Huntingdon.*  | Huntingdon.                       | 650                               |                                 |          |         | 94           | 10        | 49       | 25, 30 | 82.3             | 59.2             | 23.1  | 34           | 14    | 11     | 24    |
| Lebanon.      | Lebanon.                          | 474                               | 30.02                           | 30.26    | 29.71   | 94           | 10        | 47       | 29     | 81.2             | 60.9             | 20.3  | 33           | 11    | 8      | 5     |
| Lehigh.       | Coopersburg.                      | 520                               |                                 |          |         | 94           | 11        | 52       | 1.3    | 78.8             | 62.6             | 16.2  | 26           | 1     | 4      | 5     |
| Luzerne.      | Wilkes-Barre.                     | 575                               |                                 |          |         | 96           | 10        | 45       | 29     |                  |                  |       |              |       |        |       |
| McKean.       | Smithport.                        | 1,390                             |                                 |          |         | 90           | 10        | 42       | 29     | 78.6             | 54.1             | 24.5  | 36           | 17    | 11     | 24    |
| Montgomery.   | Meridian.                         | 1,300                             |                                 |          |         | 90           | 10        | 42       | 29     | 82.7             | 65.6             | 17.1  | 27           | 1     | 5      | 18    |
| Philadelphia. | Philadelphia Weather Bureau.      | 117                               | 30.00                           | 30.21    | 29.71   | 94           | 10        | 54       | 30     | 82.7             | 65.6             | 17.1  | 27           | 1     | 5      | 18    |
| Philadelphia. | Philadelphia (Centennial Avenue). | 120                               | 30.01                           | 30.24    | 29.72   | 94           | 10        | 54       | 30     | 82.7             | 65.6             | 17.1  | 27           | 1     | 5      | 18    |
| Philadelphia. | Philadelphia (Centennial Avenue). | 120                               | 30.01                           | 30.24    | 29.72   | 94           | 10        | 54       | 30     | 82.7             | 65.6             | 17.1  | 27           | 1     | 5      | 18    |
| Schuylkill.   | Gladville.                        | 1,000                             | 29.99                           | 30.16    | 29.70   | 89           | 10        | 38       | 16     | 76               | 58               | 13    | 47           | 14    | 8      | 30    |

|               |       |       |       |       |      |     |     |     |     |      |      |      |     |     |     |     |
|---------------|-------|-------|-------|-------|------|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|
| Snyder.       | 445   | 29.90 | 30.23 | 29.53 | 69   | 95  | 10  | 40  | 29  | 82.4 | 50.5 | 31.9 | 37  | 3   | 26  | 16  |
| Somerset.     | 2,250 | ...   | ...   | ...   | 68.4 | 93  | 10  | 35  | 30  | 80.6 | 54.5 | 26.1 | 41  | 1   | 12  | 21  |
| Tioga.        | 1,327 | ...   | 30.26 | 29.61 | 67.4 | 86  | 10  | 35  | 30  | 74.3 | 50.2 | 24.1 | 36  | 30  | 8   | 21  |
| Union.        | 1,450 | ...   | ...   | ...   | 71.2 | 95  | 10  | 47  | 29  | 82.7 | 53.8 | 22.9 | 33  | 1   | 9   | 24  |
| Warren.       | 1,410 | ...   | ...   | ...   | 65.6 | 94  | 9   | 38  | 30  | 78.6 | 53.6 | 24.3 | 38  | 1   | 9   | 24  |
| Wayne.        | 1,000 | ...   | ...   | ...   | 63.5 | 88  | 11  | 40  | 3   | 77.2 | 57.8 | 19.4 | 32  | 17  | 7   | 30  |
| Wayne.        | 1,000 | ...   | ...   | ...   | 63.5 | 88  | 11  | 40  | 3   | 77.2 | 57.8 | 19.4 | 32  | 17  | 7   | 30  |
| Westmoreland. | 1,750 | ...   | ...   | ...   | 68.9 | 92  | 10  | 40  | 29  | 82.3 | 55.5 | 26.8 | 39  | 16  | 9   | 24  |
| Wyoming.*     | 660   | ...   | ...   | ...   | 67.7 | 89  | 11  | 47  | 29  | 76.4 | 53.9 | 17.5 | 31  | 17  | 7   | 5   |
| York.         | 385   | 29.86 | 30.22 | 29.68 | 71.2 | 95  | 10  | 48  | 29  | 83   | 50.6 | 22.4 | 35  | 17  | 16  | 5   |
| Lawrence.     | 932   | ...   | ...   | ...   | 72.2 | 95  | 10  | 38  | 29  | 81.6 | 54.1 | 27.5 | 38  | 27  | 12  | 21  |
| New Castle.   | ...   | ...   | ...   | ...   | ...  | ... | ... | ... | ... | ...  | ...  | ...  | ... | ... | ... | ... |

† Observations taken at 12 noon.

\* Observations taken at 8 a. m. and 8 p. m.







## PRECIPITATION FOR AUGUST, 1891.

| DATE. | Altoona. | Blue Knob. | Brower's Look. | Carlisle. | Charlottesville. | Columbus. | Coopersburg. | Doylstown. | Dyberry. | Emporium. | Etto. | Forks of Neshaminy<br>(Rush Valley). | Frederick. | Glandville. | Grampian Hills. | Hamburg. | Harrisburg. | Holidaysburg. |
|-------|----------|------------|----------------|-----------|------------------|-----------|--------------|------------|----------|-----------|-------|--------------------------------------|------------|-------------|-----------------|----------|-------------|---------------|
| 1.    |          |            | .42            |           | .23              |           | .10          | .24        |          | .06       | .01   | .55                                  | .56        |             |                 |          |             |               |
| 2.    |          |            |                |           |                  | .05       |              |            | .06      | .06       | .01   | .03                                  | .03        |             |                 |          |             | .26           |
| 3.    |          | .30        |                | 1.25      |                  |           |              |            | .06      | .06       | .01   | .06                                  | .03        |             |                 |          | T.          |               |
| 4.    | .58      | 1.00       | .05            | .30       | .05              | .09       | .04          | .11        | .06      | 1.64      | .02   | .06                                  | .19        |             | .54             | .14      | 1.19        | .89           |
| 5.    |          | .10        |                | 1.15      |                  |           | .03          |            | .26      |           |       |                                      |            | .16         |                 |          | .01         |               |
| 6.    |          |            |                |           |                  |           |              |            |          |           |       |                                      |            | .08         |                 |          | .01         |               |
| 7.    |          |            |                | .04       |                  |           |              |            |          |           |       |                                      |            |             |                 |          | T.          |               |
| 8.    |          |            |                |           |                  |           |              |            | .06      | .10       |       | .09                                  |            |             |                 |          |             |               |
| 9.    |          |            |                |           |                  |           |              | .20        |          |           |       |                                      |            |             |                 |          |             |               |
| 10.   |          |            |                |           |                  | .54       |              |            |          |           | .02   |                                      |            |             | .02             | .16      | .04         | .06           |
| 11.   | .03      | .10        | .45            | .03       | .16              | .44       | .22          |            | T.       | .23       | T.    | .20                                  | .50        | .60         | .09             | .16      | .15         |               |
| 12.   |          |            |                |           | .15              | .46       |              | .19        |          | .06       | .16   | .01                                  | .01        | .30         |                 |          |             |               |
| 13.   |          |            |                |           |                  |           |              |            |          |           |       |                                      |            |             | .30             |          |             | .22           |
| 14.   | .28      | .10        | .80            | .03       | .27              | .50       | .33          | .55        | .18      | .48       | .65   | .57                                  | 1.04       | .42         |                 | 1.37     | .54         | .14           |
| 15.   |          |            |                |           |                  |           |              |            |          |           | .13   | .57                                  |            |             |                 |          |             |               |
| 16.   |          |            |                |           |                  |           |              |            |          |           |       |                                      |            |             |                 |          |             |               |
| 17.   |          | .18        | .33            | .35       | .55              | .29       | 1.09         | .81        | .14      | .21       |       | .96                                  | .44        | .64         | .17             | 1.37     | .48         | .19           |
| 18.   | .05      |            |                |           |                  |           |              |            |          |           |       |                                      |            |             |                 |          |             |               |
| 19.   |          | .20        |                | .23       | .01              |           |              |            |          | .20       | .04   |                                      | .03        | .66         | .40             | .43      | .26         | .33           |
| 20.   | .35      | 1.10       |                | .22       | .32              | .08       | 1.14         | .04        | .14      | .24       | .05   | .15                                  | .36        | .36         | 1.13            |          |             | .32           |
| 21.   |          |            |                | .40       |                  | .11       |              |            |          |           | T.    |                                      | .20        | .30         | .53             |          |             | .35           |
| 22.   | .02      | .60        | .04            | .13       | .30              | .72       | .22          | .20        | .50      | 1.02      | .36   | .01                                  | .36        | .30         | .60             | 1.08     | .33         |               |
| 23.   | .48      | .50        | 3.70           | 1.00      | 1.05             | .69       | 1.98         | 5.21       | 1.32     | .69       | .36   | 1.33                                 | 2.14       | 1.08        | .60             | 1.60     | 1.85        | .32           |
| 24.   | .88      |            |                |           |                  | .36       | .20          | .04        | .15      |           |       | .01                                  | .00        |             |                 | .02      |             |               |
| 25.   | .03      | .10        | .42            | .45       | .07              |           | .96          |            |          |           |       | .04                                  | .48        | .54         | .42             | .60      | T.          | .35           |
| 26.   |          |            |                |           | .02              | .29       | .27          | .57        | 1.32     | .14       | .16   | .07                                  | .09        |             |                 |          | .34         |               |
| 27.   | 1.08     | 1.00       | .07            | .82       | .02              | .04       | .27          | .31        | .22      |           |       | .60                                  |            |             |                 |          | .07         |               |
| 28.   |          |            |                |           |                  |           |              |            |          |           |       |                                      |            |             |                 |          |             |               |
| 29.   |          |            | .09            |           | .60              |           | .61          | .56        | .12      |           |       | .20                                  |            |             |                 |          | T.          | .13           |
| 30.   |          | .10        | .12            |           | .04              | .20       | .11          | .05        | .08      | .20       |       | .01                                  | .07        |             | .17             |          | T.          |               |
| 31.   |          |            |                |           |                  |           |              |            |          |           |       |                                      |            |             |                 |          |             |               |
|       | 3.13     | 5.40       | 5.03           | 5.53      | 5.51             | 4.08      | 7.16         | 8.08       | 4.75     | 5.40      | 1.96  | 4.90                                 | 7.45       | 9.47        | 4.08            | 6.30     | 5.20        | 4.25          |

\* United States weather bureau stations.

## PRECIPITATION FOR AUGUST, 1891--Continued.

| DATE. | Honesdale. | Huntingdon. | Johnstown. | Kennett Square. | Lansdale. | Lebanon. | LeRoy. | Lewistown. | Loganville. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Ottsville. | Philadelphia.* | Philadelphia. | Pittsburgh.* |
|-------|------------|-------------|------------|-----------------|-----------|----------|--------|------------|-------------|-------------|--------------|------------|-----------------|-------------|------------|----------------|---------------|--------------|
| 1     |            |             |            | .11             | .21       |          |        |            |             |             |              |            |                 |             | .20        | .62            | .59           |              |
| 2     |            |             |            | .11             | .15       |          |        |            |             | .05         | .02          |            |                 |             |            | .83            | .12           |              |
| 3     |            | .25         | .08        |                 |           |          |        |            |             |             |              |            | .20             | .02         |            |                | .59           | .47          |
| 4     |            | .89         | .80        | .47             | .12       |          | .05    | 1.63       | .14         | .32         | .35          |            |                 |             | .06        | .03            | .11           | .06          |
| 5     |            |             |            |                 |           | .32      | .16    | 1.14       | .27         |             |              |            | .24             |             | .55        | .03            | .03           |              |
| 6     |            |             |            |                 |           | .02      |        |            |             |             |              |            |                 |             |            | .03            | .02           | .10          |
| 7     |            |             |            |                 |           |          |        |            |             |             |              |            |                 |             |            |                |               |              |
| 8     |            | .01         |            |                 |           | .02      | .05    |            |             | .11         |              |            |                 |             |            |                |               |              |
| 9     | .07        |             |            |                 |           |          | .04    |            |             |             |              |            |                 |             | .02        | .02            | .02           |              |
| 10    |            |             |            |                 |           |          | .04    |            |             |             |              |            |                 |             |            |                |               |              |
| 11    | .04        | .31         | .32        |                 |           | .05      | .21    | .70        | .25         | .10         | .06          |            | .33             | .45         | .17        | .61            | .80           | .40          |
| 12    |            | .21         | .21        | .08             | .27       | .50      |        |            | .16         |             |              |            | .12             |             |            | .02            | .07           | .14          |
| 13    |            |             |            |                 |           |          |        |            |             |             |              |            |                 | .26         |            |                |               |              |
| 14    |            | .05         | .05        |                 |           | .37      | .35    |            | .27         | .00         | .06          |            | .58             |             | 1.05       | .51            | .70           | .05          |
| 15    | .20        | .35         | .28        | .49             | .58       |          |        |            |             |             |              |            |                 |             |            |                | .17           | .05          |
| 16    |            |             |            |                 |           |          |        |            |             |             |              |            |                 |             |            |                |               |              |
| 17    |            |             |            |                 |           |          |        |            |             |             |              |            |                 |             |            |                | .02           | .17          |
| 18    | .06        | .47         | .33        | .02             | .48       | .34      | .35    |            |             |             | .33          |            |                 |             | .58        | .27            | .16           | .03          |
| 19    |            |             |            |                 |           |          |        |            |             | .10         |              |            | .15             |             |            |                |               |              |
| 20    |            | .10         | .11        |                 |           | .88      | .25    | .46        |             | .97         | .33          |            | .53             | .17         | .11        | .03            | .03           | .07          |
| 21    | .22        | .32         | .30        | .08             | .10       |          |        |            |             |             |              |            |                 |             |            | .13            | .10           | .19          |
| 22    |            | .07         | .07        |                 |           | .18      | .73    | 4.09       | .60         | .98         |              |            | .50             | .37         | .59        | .01            | .01           | .18          |
| 23    | .33        | .27         | .20        | 2.03            | 3.15      | .25      | .35    |            | .70         | .40         |              |            | 1.19            | .16         | 2.84       | .17            | .42           | .23          |
| 24    | 1.08       | .51         | .60        | 2.01            | .49       | .01      |        |            |             |             | 1.04         |            |                 |             | .02        | .00            | 3.01          |              |
| 25    |            | .02         | .02        | 1.20            | .14       |          |        |            | .42         |             |              |            |                 |             | .05        | .03            | .09           |              |
| 26    |            |             |            |                 |           |          |        |            |             | .35         | .97          |            | .28             |             | .05        | .21            | .64           |              |
| 27    | 1.21       | .33         | .20        | .10             |           | .88      | .40    | 1.40       |             |             |              |            |                 |             | .29        | .54            | .16           |              |
| 28    | .09        |             |            |                 |           |          |        |            |             |             |              |            |                 |             |            |                |               |              |
| 29    |            |             |            | .88             | .09       | .02      |        |            |             |             | .13          |            |                 |             | .48        | .03            | .03           |              |
| 30    | .18        |             |            |                 | .03       | T        |        |            |             | .03         |              |            |                 |             |            | .66            | .85           |              |
| 31    |            | .30         |            |                 |           |          |        |            |             |             |              |            |                 |             |            | .03            | .73           |              |
|       | 4.21       | 3.80        | 3.87       | 8.74            | 6.62      | 5.06     | 4.33   | 9.42       | 2.81        | 4.40        | 5.89         |            | 4.82            | 1.43        | 7.85       | 4.22           | 3.30          | 8.37         |
|       |            |             |            |                 |           |          |        |            |             |             |              |            |                 |             |            |                |               | 1.90         |

\* United States weather bureau station.

## PRECIPITATION FOR AUGUST, 1891.

| DATE | Point Pleasant. | Poistown. | Quakertown. | Reading. | Seisholtzville. | Selinsgrove. | Smithport. | Smith's Corner. | Somerset. | Southinton. | State College. | Swarthmore. | Uniontown. | Wellshoro. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York |
|------|-----------------|-----------|-------------|----------|-----------------|--------------|------------|-----------------|-----------|-------------|----------------|-------------|------------|------------|---------------|-----------|---------------|--------|------|
| 1.   | .42             | .22       | .06         | .01      | .03             | .03          | .11        | .30             |           |             | .01            |             |            |            | .11           |           |               |        | .03  |
| 2.   |                 | .30       | .01         |          | .03             | .22          |            |                 | .25       |             | .50            |             | .57        |            | .03           |           |               | .00    | .10  |
| 3.   |                 |           |             | .33      | .13             | .22          | .35        | .04             | .00       | .47         | .50            |             | .08        |            | .07           |           | .05           | .15    | .03  |
| 4.   |                 |           | .02         | .03      | .12             | .41          |            |                 |           | .35         | .11            |             |            |            | .42           |           | .30           | .15    | .21  |
| 5.   |                 |           | .41         | .01      |                 |              |            |                 |           |             |                |             |            |            |               |           |               |        |      |
| 6.   |                 |           |             | .01      |                 |              |            |                 |           |             |                |             |            |            |               |           |               |        |      |
| 7.   |                 |           |             |          |                 |              |            |                 |           |             | .16            |             |            |            |               |           |               | .04    |      |
| 8.   |                 |           | .11         | .01      |                 |              | .50        |                 |           |             |                |             |            |            |               |           |               |        |      |
| 9.   |                 |           | .11         |          |                 |              |            |                 |           | .12         |                |             |            |            |               |           |               |        |      |
| 10.  | .21             | .22       |             |          | .03             | .03          | .11        |                 | .45       |             | .82            |             | .30        | 1.52       |               |           |               | .03    |      |
| 11.  |                 | .38       | .38         | .45      | .78             | .44          | .03        | .50             | .10       | .05         | .03            |             | .18        | .08        | 1.10          |           | .04           | .54    | .11  |
| 12.  |                 |           |             |          |                 |              | .22        |                 | .30       | .20         | .74            |             | .11        | .05        | .72           |           |               | .13    | .31  |
| 13.  |                 |           |             |          |                 |              |            | 1.05            |           |             | 1.25           |             |            |            |               |           |               |        |      |
| 14.  | .90             | 1.40      | .38         | 1.07     | 1.35            | 1.30         |            |                 |           |             |                |             | .03        | .02        | .97           |           | .41           | .55    | .35  |
| 15.  |                 |           |             |          |                 |              |            | .91             | .07       | .00         | .70            |             |            |            |               |           |               |        |      |
| 16.  | .81             | .40       | 1.81        | 1.02     | 1.24            | .02          |            |                 | .15       | .55         | .05            |             |            | .02        | .20           |           | .50           | .15    | .30  |
| 17.  |                 |           |             | .01      |                 |              |            |                 | .35       | .50         | .57            |             |            |            |               |           |               |        |      |
| 18.  |                 | .25       | .04         |          |                 | .53          | .35        | .06             | .33       | .50         |                |             | .80        | .12        | .02           |           | .80           | 1.05   | .30  |
| 19.  | .05             | .25       | .50         |          |                 | .02          | .13        | .02             | .13       | .23         | .07            |             | .07        | .20        | .37           |           | .70           | .19    | 1.51 |
| 20.  | 1.02            | 2.87      | 2.32        | 3.15     | .23             | 1.72         | 1.60       | 1.16            | .35       | 1.52        | 1.08           |             | .55        | .10        | 2.09          |           | .10           |        |      |
| 21.  | 4.24            |           |             | 3.25     | 1.51            | 1.37         | .50        | 4.83            | .59       |             |                |             |            |            | .35           |           |               |        |      |
| 22.  |                 |           | .29         | .10      | .28             |              |            | .29             | .25       |             |                |             | .19        |            | .07           |           |               |        |      |
| 23.  |                 |           |             |          |                 |              |            |                 |           |             |                |             |            |            |               |           |               |        |      |
| 24.  |                 |           |             |          |                 |              |            | .08             |           | .49         | .33            |             | .07        | .46        | .08           |           | .60           | .13    | .01  |
| 25.  |                 |           |             | 1.35     | .34             | .78          |            |                 |           |             |                |             |            |            |               |           |               |        |      |
| 26.  |                 | .12       | .18         |          |                 | .13          |            | .33             | .47       |             |                |             | .07        |            |               |           |               |        |      |
| 27.  | .21             | .05       | .48         |          |                 |              |            |                 |           |             |                |             |            |            |               |           |               |        |      |
| 28.  | .67             | .50       |             |          |                 |              |            | .45             |           |             |                |             |            |            |               |           |               |        |      |
| 29.  | .41             | .30       | .34         | .05      | .31             |              |            |                 |           |             |                |             |            |            |               |           | .10           |        |      |
| 30.  |                 |           |             | .03      | .09             |              | T.         | .02             |           | .06         |                |             |            | .02        | .12           |           |               |        |      |
| 31.  |                 |           |             |          |                 |              |            |                 |           |             |                | 2.51        | 3.85       | 3.57       | 8.85          | 3.46      | 2.49          | 3.29   |      |
|      | 9.36            | 7.01      | 8.02        | 11.77    | 7.18            | 7.18         | 4.15       | 10.18           | 5.02      | 4.15        | 5.40           |             |            |            |               |           |               |        |      |



For September, 1891.

*Temperature.*

The mean temperature of forty-five stations for September, 1891, was  $66^{\circ}.4$ , which is about  $5^{\circ}.4$  above the normal, and  $4^{\circ}.4$  above the corresponding month of 1890.

The mean of the daily maximum and minimum temperatures,  $78^{\circ}.4$  and  $54^{\circ}.8$ , gives an average daily range of  $23^{\circ}.6$  and a monthly mean of  $66^{\circ}.6$ .

Highest monthly mean,  $71^{\circ}.6$  at Philadelphia.

Lowest monthly mean,  $60^{\circ}.8$  at Wellsboro', Dyberry and Smethport.

Highest temperature recorded during the month,  $94^{\circ}$  on the 26th at Coatesville and on the 17th at Somerset.

Lowest temperature,  $32^{\circ}$  on the 30th at Wellsboro' and Columbus.

Greatest local monthly range,  $61^{\circ}$  at Somerset.

Least local monthly range,  $37^{\circ}$  at Erie.

Greatest daily range,  $52^{\circ}$  at Selinsgrove on the 18th.

Least daily range,  $4^{\circ}$  at Erie on the 6th and at Dyberry on the 5th.

From January 1, 1891, to September 30, 1891, the excess in temperature at Philadelphia was  $303^{\circ}$ , at Erie  $158^{\circ}$ , and at Pittsburgh,  $203^{\circ}$ .

A series of dry and cloudless days occurred from the 9th to the 28th inclusive; the last eleven days of the series being phenomenally warm. Cool nights, however, gave relief from the oppressive heat of the days. This has been the hottest September on record excepting September, 1881.

The coldest days were the 9th, 10th and 30th.

Frosts were reported on the 9th, 10th, 11th and 30th in the high districts.

*Barometer.*

The mean pressure for the month, 30.154, is about .07 inch above the normal. At the United States weather bureau stations the highest observed was 30.43 at Harrisburg on the 10th, and the lowest, 29.88, at Philadelphia on the 17th.

*Precipitation.*

The average rainfall, 2.39 inches for the month, is a deficiency of 1.18 inches.

The largest totals were Kennett Square, 5.00, Charlesville, 4.55, West Chester, 4.30

The least were Carlisle, 1.05; Lebanon, 1.07; Emporium, 1.17; Quakertown, 1.17.

*Wind and Weather.*

The prevailing wind was from the southwest. The weather was very favorable for harvesting and curing crops and for fall seeding.

Average number: Rainy days, 7; clear days, 17; fair, 8; cloudy, 5.

## MONTHLY SUMMARY OF REPORTS by Voluntary Observers of the Pennsylvania State Weather Service for September, 1891.

| COUNTY.     | STATION.                           | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL. |          |         |       | TEMPERATURE. |       |          |       |                  |                  |       |              |       |        |       |   |
|-------------|------------------------------------|-----------------------------------|---------------------------------|----------|---------|-------|--------------|-------|----------|-------|------------------|------------------|-------|--------------|-------|--------|-------|---|
|             |                                    |                                   | Mean.                           | Highest. | Lowest. | Mean. | MAXIMUM.     |       | MINIMUM. |       | Mean of maximum. | Mean of minimum. | Mean. | DAILY RANGE. |       |        |       |   |
|             |                                    |                                   |                                 |          |         |       | Highest.     | Date. | Lowest.  | Date. |                  |                  |       | Greatest.    | Date. | Least. | Date. |   |
|             |                                    |                                   |                                 |          |         |       |              |       |          |       |                  |                  |       |              |       |        |       |   |
| Allegheny,* | Pittsburgh.                        | 847                               | 30.16                           | 30.42    | 29.98   | 60.4  | 90           | 2     | 46       | 9     | 79.7             | 59               | 20.7  | 29           | 20    | 5      | 6     | 5 |
| Bedford.    | Charlesville.                      | 1,300                             |                                 |          |         | 63.1  | 88           | 16    | 37       | 9     | 80.5             | 51.1             | 27    | 38           | 18    | 10     | 5     | 5 |
| Berks.*     | Reading.                           | 380                               | 30                              | 30.32    | 29.76   | 66.7  | 94           | 26    | 43       | 9     | 78.1             | 57.3             | 23.2  | 38           | 17    | 49     | 3     | 3 |
| Berks.*     | Reading.                           | 380                               | 30                              | 30.32    | 29.76   | 65.8  | 94           | 26    | 43       | 9     | 78.1             | 57.3             | 23.2  | 38           | 17    | 49     | 3     | 3 |
| Blair.      | Altoona.                           | 1,181                             |                                 |          |         | 62.3  | 86           | 27    | 28       | 7     | 70.7             | 56.8             | 18.8  | 26           | 28    | 5      | 6     | 6 |
| Blair.      | Blue Knob.                         | 2,500                             |                                 |          |         | 62.9  | 84           | 17    | 20       | 8     | 70.2             | 52.3             | 23.9  | 31           | 18    | 12     | 9     | 5 |
| Blair.      | Holidaysburg.                      | 947                               |                                 |          |         | 64.5  | 91           | 17    | 26       | 9     | 76.2             | 54.9             | 21.8  | 33           | 17    | 6      | 6     | 6 |
| Bradford.   | Wysox.                             | 718                               | 30.16                           | 30.44    | 29.91   | 64.5  | 91           | 17    | 26       | 9     | 76.2             | 54.9             | 21.8  | 33           | 17    | 6      | 6     | 6 |
| Bradford.   | Le Roy.                            | 1,400                             | 30.16                           | 30.44    | 29.91   | 64.5  | 91           | 17    | 26       | 9     | 76.2             | 54.9             | 21.8  | 33           | 17    | 6      | 6     | 6 |
| Bucks.      | Halmerville.                       |                                   | 30.15                           | 30.35    | 29.80   | 65.5  | 90           | 26    | 42       | 10    | 73.1             | 56.1             | 22.4  | 30           | 11    | 10     | 6     | 6 |
| Bucks.      | Forks of Nesbaminny (Rush Valley). |                                   |                                 |          |         | 65.5  | 90           | 26    | 42       | 10    | 73.1             | 56.1             | 22.4  | 30           | 11    | 10     | 6     | 6 |
| Bucks.      | Quakertown.                        | 536                               |                                 |          |         | 66.5  | 92           | 17    | 21       | 12    | 81.5             | 53.7             | 27.8  | 38           | 20    | 12     | 30    | 5 |
| Cambria.*   | Uniontown.                         | 1,184                             | 30.20                           | 30.50    | 30.06   | 67.4  | 92           | 17    | 21       | 12    | 81.5             | 53.7             | 27.8  | 38           | 20    | 12     | 30    | 5 |
| Cameron.    | Uniontown.                         | 1,184                             | 30.20                           | 30.50    | 30.06   | 67.4  | 92           | 17    | 21       | 12    | 81.5             | 53.7             | 27.8  | 38           | 20    | 12     | 30    | 5 |
| Carbon.     | Mauch Chunk (25 days).             | 1,300                             |                                 |          |         | 66.5  | 89           | 18    | 26       | 13    | 78.3             | 54.5             | 23.7  | 43           | 18    | 9      | 6     | 5 |
| Centre.     | State College.                     | 1,591                             | 30.12                           | 30.39    | 29.83   | 66.4  | 86           | 21    | 40       | 10    | 78.3             | 54.5             | 23.7  | 43           | 18    | 9      | 6     | 5 |
| Chester.    | West Chester.                      | 455                               | 30.14                           | 30.41    | 29.87   | 68.2  | 90           | 26    | 46       | 9     | 81.6             | 56.2             | 25.4  | 39           | 17    | 6      | 8     | 5 |
| Chester.    | Coatesville.                       | 380                               |                                 |          |         | 67.4  | 94           | 26    | 43       | 9     | 81.6             | 56.2             | 25.4  | 39           | 17    | 6      | 8     | 5 |
| Chester.    | Kennett Square.                    | 275                               |                                 |          |         | 67.4  | 94           | 26    | 43       | 9     | 81.6             | 56.2             | 25.4  | 39           | 17    | 6      | 8     | 5 |
| Chester.    | Phoenixville.                      | 183                               | 30.16                           | 30.43    | 29.92   | 68.9  | 90           | 26    | 42       | 11    | 78.4             | 58.7             | 26.7  | 39           | 11    | 10     | 8     | 8 |
| Clearfield. | Grampian Hills.                    | 1,450                             |                                 |          |         | 68.9  | 90           | 26    | 42       | 11    | 78.4             | 58.7             | 26.7  | 39           | 11    | 10     | 8     | 8 |
| Crawford.   | Lock Haven.                        | 560                               |                                 |          |         | 64    | 84           | 26    | 38       | 9     | 75.8             | 53.5             | 20.3  | 33           | 10    | 6      | 8     | 8 |
| Crawford.   | Lock Haven.                        | 560                               |                                 |          |         | 66    | 91           | 18    | 40       | 9     | 80.4             | 54.1             | 20.3  | 37           | 10    | 6      | 8     | 8 |
| Cumberland. | Carlisle.                          | 1,300                             |                                 |          |         | 66    | 91           | 18    | 40       | 9     | 80.4             | 54.1             | 20.3  | 37           | 10    | 6      | 8     | 8 |
| Dauphin.    | Harrisburg.                        | 361                               | 30.16                           | 30.43    | 29.93   | 68.4  | 92           | 26    | 43       | 10    | 82.6             | 57.2             | 25.6  | 36           | 17    | 11     | 5     | 5 |
| Dauphin.    | Swatmore College (23 day ).        | 190                               | 30.15                           | 30.32    | 29.97   | 69.4  | 88           | 26    | 50       | 10    | 78.7             | 60.2             | 18.5  | 30           | 17    | 5      | 29    | 3 |
| Erie.*      | Swatmore College (23 day ).        | 681                               | 30.15                           | 30.32    | 29.97   | 69.4  | 88           | 26    | 50       | 10    | 78.7             | 60.2             | 18.5  | 30           | 17    | 5      | 29    | 3 |
| Fayette.    | Uniontown.                         | 1,000                             | 30.13                           | 30.40    | 29.91   | 69.7  | 91           | 23    | 47       | 11    | 79.5             | 58.9             | 20.6  | 30           | 21    | 11     | 4     | 6 |
| Fayette.    | Uniontown.                         | 1,000                             | 30.13                           | 30.40    | 29.91   | 69.7  | 91           | 23    | 47       | 11    | 79.5             | 58.9             | 20.6  | 30           | 21    | 11     | 4     | 6 |
| Fulton.     | McConnellsburg.                    | 875                               |                                 |          |         | 68.6  | 88           | 24    | 41       | 9     | 78.6             | 56.3             | 22.3  | 30           | 10    | 11     | 6     | 6 |
| Fulton.     | McConnellsburg.                    | 875                               |                                 |          |         | 68.6  | 88           | 24    | 41       | 9     | 78.6             | 56.3             | 22.3  | 30           | 10    | 11     | 6     | 6 |
| Huntingdon. | Huntingdon.                        | 650                               |                                 |          |         | 67.5  | 92           | 21    | 25       | 3     | 81.5             | 53.8             | 27.1  | 38           | 18    | 9      | 5     | 5 |
| Lancaster.  | Lancaster.                         | 413                               | 30.17                           | 30.40    | 29.87   | 67.3  | 83           | 22    | 40       | 30    | 74.3             | 55.5             | 23.6  | 41           | 21    | 10     | 8     | 8 |
| Lancaster.  | New Castle.                        | 922                               |                                 |          |         | 67.3  | 83           | 22    | 40       | 30    | 74.3             | 55.5             | 23.6  | 41           | 21    | 10     | 8     | 8 |
| Lebanon.    | Lebanon.                           | 774                               |                                 |          |         | 69.8  | 91           | 21    | 36       | 10    | 79.3             | 50.8             | 25.8  | 33           | 2     | 9      | 23    | 3 |
| Lebanon.    | Lebanon.                           | 774                               |                                 |          |         | 69.8  | 91           | 21    | 36       | 10    | 79.3             | 50.8             | 25.8  | 33           | 2     | 9      | 23    | 3 |
| Lehigh.     | Coopersburg.                       | 520                               | 30.16                           | 30.44    | 29.92   | 66.9  | 91           | 22    | 26       | 40    | 80.3             | 55.6             | 24.8  | 10           | 18    | 12     | 5     | 5 |
| Lehigh.     | Coopersburg.                       | 520                               | 30.16                           | 30.44    | 29.92   | 66.9  | 91           | 22    | 26       | 40    | 80.3             | 55.6             | 24.8  | 10           | 18    | 12     | 5     | 5 |

\* Observations taken at 12 noon.

\* Observations taken at 8 a. m. and 8 p. m.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.  | STATION. | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL.* |         |       |          |         |       | TEMPERATURE.     |                  |       |           |       |        |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|          |          |                                   | MAXIMUM.                         |         |       | MINIMUM. |         |       | Mean of maximum. | Mean of minimum. | Mean. | Greatest. | Date. | Least. | Date. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|          |          |                                   | Highest.                         | Lowest. | Mean. | Highest. | Lowest. | Date. |                  |                  |       |           |       |        |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|          |          |                                   |                                  |         |       |          |         |       |                  |                  |       |           |       |        |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Luzerne. | Drifton. | 1,655                             |                                  |         |       |          |         |       |                  |                  |       |           |       |        |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

\* Observations taken at 8 a. m. and 8 p. m.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.     | STATION.                          | Relative humidity. | Dew point. | PRECIPITATION. |                              | NUMBER OF DAYS. |       |         | WIND.                 |                       |         |         |
|-------------|-----------------------------------|--------------------|------------|----------------|------------------------------|-----------------|-------|---------|-----------------------|-----------------------|---------|---------|
|             |                                   |                    |            | Total inches.  | Total snowfall during month. | Clear.          | Fair. | Cloudy. | Number of rainy days. | PREVAILING DIRECTION. |         |         |
|             |                                   |                    |            |                |                              |                 |       |         |                       | 7 a. m.               | 2 p. m. | 9 p. m. |
| Allegheny.  | Pittsburgh.                       | 76                 | 59.3       | 1.90           | •                            | 15              | 10    | 9       | 7                     | NW                    | NW      | NW      |
| Bradford.   | Charlesville.                     | 81.8               | 58.1       | 4.55           |                              | 16              | 8     | 5       | 7                     | SW                    | SW      | SW      |
| Berk.       | Hamburg.                          |                    |            | 1.77           |                              | 9               | 16    |         | 8                     | NW                    | SW      | SW      |
| Berk.       | Reading.                          |                    |            | 1.57           |                              |                 |       |         |                       |                       |         |         |
| Blair.      | Altoona.                          |                    |            | 2.71           |                              |                 |       |         |                       |                       |         |         |
| Blair.      | Blue Knob.                        | 78.8               | 58         | 2.70           |                              | 18              | 6     | 4       | 5                     | SW                    | SW      | NW      |
| Blair.      | Holidaysburg.                     | 86                 | 59.9       | 2.16           |                              | 22              | 4     | 4       | 4                     | SW                    | SE      | SE      |
| Bradford.   | Wysox.                            |                    |            | 1.79           |                              | 16              | 5     | 9       | 4                     | SW                    | SW      | SW      |
| Bucks.      | Le Roy.                           |                    |            | 2.71           |                              | 15              | 10    | 3       | 8                     | SW                    | SW      | SW      |
| Bucks.      | Hulmeville.                       |                    |            | 3.09           |                              | 15              | 12    | 3       | 4                     | S                     | N       | W       |
| Bucks.      | Forks of Neshaminy (Rush Valley). |                    |            | 1.17           |                              | 7               | 16    |         | 8                     | S                     | N       | W       |
| Bucks.      | Quakertown.                       |                    |            | 1.83           |                              | 18              | 7     | 5       | 9                     | W                     | W       | W       |
| Bucks.      | Johnstown.                        | 88.2               | 63.4       | 1.17           |                              | 17              | 8     | 5       | 6                     | W                     | W       | W       |
| Carbon.     | Emporium.                         |                    |            | 1.37           |                              | 17              | 8     | 5       | 6                     | W                     | W       | W       |
| Carbon.     | Mauch Chunk (28 days).            |                    |            | 2.20           |                              | 18              | 8     | 8       | 6                     | W                     | W       | W       |
| Chester.    | State College.                    | 74.3               | 58.2       | 4.30           |                              | 23              | 3     | 4       | 8                     | NW                    | SW      | SE      |
| Chester.    | West Chester.                     |                    |            | 3.38           |                              | 17              | 10    | 3       | 6                     | W                     | W       | W       |
| Chester.    | Colesville.                       |                    |            | 5              |                              | 15              | 10    | 3       | 6                     | NW                    | NW      | NW      |
| Chester.    | Kennett Square.                   | 85.6               | 62.5       | 2.67           |                              | 13              | 12    | 5       | 6                     | W                     | W       | W       |
| Chester.    | Phoenixville.                     |                    |            | 2.38           |                              | 16              | 9     | 1       | 5                     | W                     | W       | W       |
| Clearfield. | Grampian Hills.                   |                    |            | 3.41           |                              | 18              | 7     |         | 8                     | W                     | W       | W       |
| Clinton.    | Lock Haven.                       |                    |            |                |                              |                 |       |         |                       |                       |         |         |
| Crawford.   | Meadville.                        |                    |            |                |                              | 16              | 11    |         | 8                     | NW                    | SW      | W       |
| Crawford.   | Carlisle.                         | 88.6               | 64.2       | 1.05           |                              | 13              | 11    |         | 6                     | NW                    | W       | W       |
| Cumberland. | Larriburg.                        | 76                 | 59.4       | 1.75           |                              | 13              | 11    |         | 6                     | W                     | W       | W       |
| Dauphin.    | Harrisburg.                       |                    |            | 2.89           |                              | 18              | 4     | 6       | 5                     | NW                    | W       | W       |
| Delaware.   | Swarthmore College (28 days).     | 82.1               | 63.6       | 2.82           |                              | 14              | 9     | 7       | 11                    | SW                    | S       | S       |
| Erie.       | Erie.                             | 74                 | 56         | 2.82           |                              | 23              | 4     | 3       | 8                     | S                     | S       | S       |
| Fayette.    | Uniontown.                        | 80.2               | 60         | 2.23           |                              | 19              | 8     |         | 5                     | W                     | W       | W       |
| Fayette.    | McConnellsburg.                   |                    |            | 2.65           |                              | 23              | 4     |         | 3                     | W                     | W       | W       |
| Fulton.     | Huntingdon.                       |                    |            | 2.07           |                              | 22              | 5     |         | 3                     | SW                    | SW      | SW      |
| Huntingdon. | Lancaster.                        | 73.6               | 60.4       | •              |                              | 19              | 8     |         | 3                     | SE                    | SE      | SE      |
| Lancaster.  | Lancaster (24 days, 7th to 30th). |                    |            | 3.34           |                              | 16              | 8     |         | 6                     | NE                    | NE      | NE      |
| Lawrence.   | New Castle.                       | 82.9               | 61.2       | 1.07           |                              | 17              | 11    |         | 2                     | NE                    | NE      | NE      |
| Lebanon.    | Lebanon.                          |                    |            | 2.05           |                              | 13              | 11    |         | 6                     | SW                    | SW      | SW      |
| Lebanon.    | Coopersburg.                      |                    |            |                |                              |                 |       |         |                       | NE                    | NE      | NE      |

† Observations taken at 12 noon.

(Observations taken at 8 a. m. and 8 p. m.)



## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.       | STATION.                          | Relative humidity. | Dew point. | PRECIPITA-<br>TION. |                              | NUMBER OF<br>DAYS |       |         | Number of rainy days. | WIND.                 |         |         |
|---------------|-----------------------------------|--------------------|------------|---------------------|------------------------------|-------------------|-------|---------|-----------------------|-----------------------|---------|---------|
|               |                                   |                    |            | Total inches.       | Total snowfall during month. | Clear.            | Fair. | Cloudy. |                       | PREVAILING DIRECTION. |         |         |
|               |                                   |                    |            |                     |                              |                   |       |         |                       | 7 a. m.               | 3 p. m. | 9 p. m. |
| Luzerne.      | Drifton.                          |                    |            | 1.70                |                              | 22                | 6     | 5       | 5                     | NW                    | SW      | NW      |
| Luzerne.*     | Wilkes-Barre.                     |                    |            | 2.45                |                              | 22                | 22    | 4       | 5                     | SW                    | SW      | SW      |
| McKean.       | Smithport.                        |                    |            | 2.63                |                              | 22                | 6     | 4       | 5                     | W                     | W       | W       |
| Montgomery.   | Pottstown.                        | 80.4               | 61.9       | 1.90                |                              | 17                | 7     | 4       | 4                     | NW                    | SW      | SW      |
| Philadelphia. | Philadelphia Weather Bureau.      | 76.9               | 60.6       | 1.86                |                              | 13                | 14    | 6       | 4                     | NW                    | SW      | SW      |
| Philadelphia. | Philadelphia (Centennial avenue). | 81.5               | 62.4       | 1.86                |                              | 13                | 5     | 3       | 4                     | NW                    | SW      | SW      |
| Schuylkill.   | Gladville.                        | 58                 | 63.4       | 4.12                |                              | 20                | 2     | 8       | 6                     | W                     | W       | W       |
| Snyder.       | Selinsgrove.                      | 59.7               | 53.7       | 4.12                |                              | 18                | 2     | 10      | 8                     | SE                    | NE      | SE      |
| Snyder.       | Somerset.                         | 88.7               | 59.7       | 4.11                |                              | 16                | 8     | 6       | 9                     | SW                    | SW      | SW      |
| Tioga.        | Wellshoro.                        | 68.7               | 52.3       | 2.30                |                              | 19                | 1     | 6       | 4                     | N                     | N       | N       |
| Union.*       | Columbus.                         | 65                 | 48         | 2.60                |                              | 13                | 13    | 4       | 4                     | SW                    | SW      | SW      |
| Warren.       | Dyberry.                          | 49.5               | 59         | 2.53                |                              | 22                | 3     | 2       | 5                     | NW                    | NW      | NW      |
| Wayne.        | Honesdale.                        | 49.5               | 59         | 2.53                |                              | 22                | 9     | 3       | 6                     | SW                    | SW      | SW      |
| Westmoreland. | Ligonier.                         | 88.1               |            | 1.35                |                              | 16                | 9     | 5       | 5                     | SW                    | SW      | SW      |
| Wyoming.*     | South Ealon.                      | 88.1               | 67         | 1.88                |                              | 21                | 6     | 3       | 8                     | SW                    | SW      | SW      |
| York.*        | York.                             | 88.1               | 67         | 1.88                |                              | 21                | 6     | 3       | 8                     | SW                    | SW      | SW      |

\* Observations taken at 8 a. m. and 8 p. m.

PRECIPITATION FOR SEPTEMBER, 1891.

|    | Altoona. | Blue Knob. | Brower's Look. | Carlisle. | Coatesville. | Columbus. | Copersburg. | Doylestown. | Lyberry. | Emporium. | Erie.* | Forks of Nesbannin<br>(Kush Valley). | Frederick. | Girardville. | Greenville Hills. | Hamburg. | Hartsville.* | Hollidaysburg. | Honesdale. |
|----|----------|------------|----------------|-----------|--------------|-----------|-------------|-------------|----------|-----------|--------|--------------------------------------|------------|--------------|-------------------|----------|--------------|----------------|------------|
| 1  | .14      |            |                | .03       | .04          |           | .01         |             | .08      |           |        | .02                                  | .17        | .61          |                   | .09      | .56          |                | .19        |
| 2  |          |            |                | .02       |              |           |             |             |          |           |        |                                      |            |              |                   | .14      | .03          |                | .06        |
| 3  |          | .10        | .01            | .05       |              | .12       | .04         | .08         | T.       | .08       | .16    | .04                                  |            |              |                   |          |              |                |            |
| 4  | .13      |            |                | .05       |              | .05       |             |             |          | .03       | .37    |                                      |            |              |                   |          |              |                |            |
| 5  | .28      | 1.30       | 1.21           | .62       | 2.05         | .38       | 1.30        | .85         | .96      | .19       | .73    |                                      | 1.33       | .82          | 1.44              | 1.92     | .89          | 1.30           | 1.03       |
| 6  | .80      |            | 1.05           | .36       | .36          | .65       | .30         | .91         | .04      | .13       | .24    | 2.64                                 | .18        |              | .36               | .08      | .01          |                |            |
| 7  |          |            |                |           |              |           | .02         |             |          | .14       | .00    |                                      |            |              |                   |          | T.           |                |            |
| 8  |          |            |                | .10       | .11          |           |             |             |          |           |        |                                      |            | .26          |                   | .02      | .02          | .05            |            |
| 9  | .02      | .10        |                | .02       |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 10 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 11 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 12 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 13 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 14 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 15 | .02      |            | .63            | .01       |              | .34       | .20         |             | .89      | .10       | .70    | .02                                  | .04        | .37          | .68               | .14      | .26          | .02            | .90        |
| 16 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 17 |          |            |                | .11       | .30          | .30       | .10         | .63         | .04      | .10       | .34    | .04                                  | .09        | .23          | .10               | .14      | .01          |                | .02        |
| 18 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 19 |          |            |                |           |              | .21       |             |             |          | .17       | .06    |                                      |            |              |                   |          |              |                |            |
| 20 |          |            |                |           |              |           |             |             |          |           | .02    |                                      |            |              |                   |          |              |                |            |
| 21 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 22 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 23 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 24 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 25 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 26 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 27 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 28 | .30      |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                | .01        |
| 29 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
| 30 | .12      | .30        | .18            | .22       | .08          | .40       | .08         | .12         | .36      | .27       | .40    | .33                                  | .08        | .22          | .40               | .07      | .20          | .13            | .36        |
| 31 |          |            |                |           |              |           |             |             |          |           |        |                                      |            |              |                   |          |              |                |            |
|    | 2.71     | 2.70       | 2.51           | 1.05      | 8.38         | 2.46      | 2.04        | 1.98        | 2.37     | 1.17      | 2.82   | 3.09                                 | 1.99       | 1.99         | 2.38              | 1.77     | 1.75         | 2.16           | 2.53       |

\* United States weather bureau station.

## PRECIPITATION FOR SEPTEMBER, 1891--Continued.

|     | Huntingdon. | Johnstown. | Kennett Square. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Ligonier. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Ottsville. | Philadelphia. | Phoenixville. | Pittsburgh.* | Point Pleasant. | Pottstown. |
|-----|-------------|------------|-----------------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|------------|---------------|---------------|--------------|-----------------|------------|
| 1.  |             |            |                 | .10       | .08      | .09     |            |           | .05         | .12          |            |                 |             |            |               | T             | .35          |                 |            |
| 2.  |             |            |                 | .16       | .06      | .08     |            | .25       | .36         | .08          |            | .11             | .24         | .19        | .08           |               | .01          |                 |            |
| 3.  |             | .35        | .15             |           |          |         |            |           |             |              |            | .34             | 2.11        | .65        | 1.04          | 1.42          | .58          | 2.18            |            |
| 4.  | .40         | .163       | .91             | .72       | .50      | .50     |            | .62       | .70         |              |            | 1.39            | .11         | .22        | .30           | .31           | T            |                 |            |
| 5.  | .25         | .02        | 2.65            | 1.04      | .05      | .62     |            | .63       | .53         |              |            |                 |             |            | .20           | .15           | .01          |                 |            |
| 6.  | 1.25        | .7         |                 |           |          | .02     |            |           |             | .10          |            | .44             |             |            | .08           | .08           | .10          |                 |            |
| 7.  |             | .05        | .14             |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 8.  | .10         |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 9.  |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 10. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 11. |             |            |                 |           |          |         |            |           |             |              |            | .37             | .34         | .12        |               |               | .24          | .20             | .20        |
| 12. |             | .13        |                 |           | .01      | .27     |            | .47       | 1.06        | .21          |            |                 |             |            |               |               | .03          |                 |            |
| 13. |             |            |                 |           | .02      | .37     |            |           | .02         | .26          |            |                 | .04         | .13        | .02           | .02           | T            | .21             | .21        |
| 14. |             | .01        | .06             |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 15. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 16. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 17. |             |            |                 |           |          |         |            |           |             |              |            |                 | .15         |            |               |               |              |                 |            |
| 18. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 19. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 20. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 21. |             |            |                 |           |          |         |            |           | .01         |              |            |                 |             |            |               |               |              |                 |            |
| 22. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 23. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 24. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 25. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 26. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 27. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 28. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |               |               |              |                 |            |
| 29. | .12         | .22        | .39             | .37       | .08      | .10     |            | .20       | .16         | .60          |            |                 |             | .35        | .18           | .25           | .40          | .04             | .04        |
| 30. |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            | T             |               |              |                 |            |
| 31. | 2.07        | 1.83       | 5.00            | 2.57      | 1.07     | 2.00    | 2.60       | 2.17      | 3.41        | 1.37         |            | 2.65            | 3.34        | 1.34       | 1.90          | 2.67          | 1.90         | 2.63            | 2.63       |

\* United States weather bureau station.

## PRECIPITATION FOR SEPTEMBER, 1891.—Continued.

|     | Quakertown. | Reading. | Leisholtzville. | Selinsgrove. | Smethport. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellsboro. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. | Lancaster. | Hulmeville. | Charlottesville. |
|-----|-------------|----------|-----------------|--------------|------------|-----------------|-----------|--------------|----------------|-------------|------------|------------|---------------|-----------|---------------|--------|-------|------------|-------------|------------------|
| 1.  |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        | .23   |            |             | .05              |
| 2.  |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 3.  |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        | .06   |            | .15         | .30              |
| 4.  |             |          |                 |              |            |                 | .51       |              | .44            |             | .30        | .38        | .02           |           |               | .05    |       |            |             | T                |
| 5.  |             |          |                 |              |            | .59             | 1.55      | .41          | .38            |             | .42        | .65        | 1.29          |           | .60           | 1.35   | 1.05  |            | 1.45        | 1.14             |
| 6.  |             |          | 2.30            | .50          | .75        | .33             |           | .09          | .79            |             | .09        |            | 2.42          |           |               |        | .01   |            | .82         | .48              |
| 7.  |             |          | .18             | .57          | .05        |                 |           |              | T              |             | .29        |            | .03           |           |               |        |       |            |             |                  |
| 8.  |             |          |                 |              |            |                 | .65       |              | .09            |             | .63        |            | .16           |           |               |        | .20   | .12        |             | 2.16             |
| 9.  |             | .01      |                 | .02          |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 10. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 11. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 12. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 13. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 14. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 15. |             |          |                 |              |            |                 | .85       | .23          | .01            |             | .38        | .05        | .03           |           | .30           | .62    |       | .05        |             | .31              |
| 16. |             |          |                 |              |            | .11             | .05       | .24          |                |             | .07        | .64        | .08           |           | .29           | .11    |       |            |             | T                |
| 17. |             |          | .15             | .39          | .07        |                 |           |              |                |             |            |            |               |           | .11           |        |       |            |             |                  |
| 18. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 19. |             |          |                 |              | .25        |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 20. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 21. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 22. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 23. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 24. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 25. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 26. |             |          |                 |              |            |                 |           |              | .26            |             |            |            |               |           |               |        |       |            |             |                  |
| 27. |             |          |                 | .03          |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 28. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 29. |             | .15      | .21             | .67          |            | .11             | .50       | .27          | .16            |             |            | .09        | .33           |           | .40           | .21    | .33   | .11        | .79         | .11              |
| 30. |             |          |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
| 31. |             | .05      |                 |              |            |                 |           |              |                |             |            |            |               |           |               |        |       |            |             |                  |
|     | 1.17        | 1.57     |                 | 4.12         | 2.15       | 1.29            | 4.12      | 1.35         | 2.20           | 2.80        | 2.23       | 2.30       | 4.30          |           | 1.70          | 1.79   | 1.88  | .38        | 2.71        | 4.55             |

—24 days.

For October, 1891.

*Temperature.*

The mean temperature of forty-six stations for October, 1891, was  $54^{\circ}.4$ , which is about  $1^{\circ}.5$  below the normal, and  $0^{\circ}.5$  below the corresponding month of 1890.

The mean of the daily maximum and minimum temperature,  $61^{\circ}.2$  and  $40^{\circ}.1$ , gives an average daily range of  $21^{\circ}.1$  and a monthly mean of  $50^{\circ}.7$ .

Highest monthly mean,  $55^{\circ}.7$  at Philadelphia (Centennial avenue).

Lowest monthly mean,  $44^{\circ}.1$  at Dyberry.

Highest temperature recorded during the month,  $91^{\circ}$  on the 3d at Carlisle.

Lowest temperature,  $15^{\circ}$  on the 29th at Dyberry.

Greatest local monthly range,  $69^{\circ}$  at Coatesville and Dyberry.

Least local monthly range,  $47^{\circ}$  at Altoona.

Greatest daily range,  $49^{\circ}$  at Hollidaysburg on the 2d, and at Columbus on the 13th.

Least daily range,  $1^{\circ}$  at Columbus on the 27th.

From January 1, 1891, to October 31, 1891, the excess in temperature at Philadelphia was  $240^{\circ}$ , at Erie,  $137^{\circ}$ , and at Pittsburgh,  $145^{\circ}$ .

The warmest days of the month were the 3d and 4th. The coldest were the 28th and 29th.

*Barometer.*

The mean pressure for the month, 30.11, is about .04 inch above the normal. At the United States weather bureau stations, the highest observed was 30.69 at Harrisburg on the 12th, and the lowest, 29.68 at Philadelphia on the 5th.

*Precipitation.*

The average rainfall, 3.06 inches for the month, is a deficiency of one-fourth of an inch.

The largest monthly totals were, Selinsgrove, 4.46; Wysox, 4.43; State College, 4.38.

The least were, New Castle, 0.84; Ligonier, 0.88; Pittsburgh, 1.53.

Flurries of snow occurred in several places on the 27th. During October, 1890, over 5.00 inches of snow was recorded at some stations. This October the amount was inappreciable.

*Wind and Weather.*

The prevailing direction of the wind was from the northwest.

Average number: Rainy days, 8; clear days, 11; fair days, 9; cloudy days, 11.





## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.                 | STATION.                                  | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL. |          |         |       | TEMPERATURE. |       |          |       |                  |                  |              |       |        |       |
|-------------------------|-------------------------------------------|-----------------------------------|---------------------------------|----------|---------|-------|--------------|-------|----------|-------|------------------|------------------|--------------|-------|--------|-------|
|                         |                                           |                                   | Mean.                           | Highest. | Lowest. | Mean. | MAXIMUM.     |       | MINIMUM. |       | Mean of maximum. | Mean of minimum. | DAILY RANGE. |       |        |       |
|                         |                                           |                                   |                                 |          |         |       | Highest.     | Date. | Lowest.  | Date. |                  |                  | Greatest.    | Date. | Least. | Date. |
|                         |                                           |                                   |                                 |          |         |       |              |       |          |       |                  |                  |              |       |        |       |
| McKean, . . . . .       | Smethport, . . . . .                      | 1,500                             | 30.09                           | 30.54    | 29.68   | 53.8  | 87           | 4     | 25       | 29    | 63.7             | 43.9             | 36           | 30    | 5      | 22    |
| McKean, . . . . .       | Pittsboro, . . . . .                      | 150                               | 30.10                           | 30.53    | 29.68   | 54.9  | 86           | 4     | 36       | 28    | 62.8             | 47               | 13.8         | 25    | 26     | 7     |
| Philadelphia, . . . . . | Philadelphia Weather Bureau, . . . . .    | 117                               | 30.10                           | 30.53    | 29.67   | 55.2  | 88           | 5     | 32       | 28    | 64.3             | 46.1             | 13.8         | 25    | 26     | 7     |
| Philadelphia, . . . . . | Philadelphia Centennial avenue, . . . . . | 100                               | 30.08                           | 30.40    | 29.54   | 48    | 80           | 4     | 27       | 29    | 59.3             | 39.1             | 20.2         | 25    | 29     | 12    |
| Schuylkill, . . . . .   | Girardville, . . . . .                    | 1,445                             | 30.11                           | 30.54    | 29.83   | 50.2  | 79           | 5     | 24       | 29    | 62.3             | 40.8             | 21.5         | 36    | 29     | 12    |
| Snyder, . . . . .       | Selinsgrove, . . . . .                    | 2,250                             | 30.06                           | 30.54    | 29.83   | 50.2  | 79           | 5     | 24       | 29    | 62.3             | 40.8             | 21.5         | 36    | 29     | 12    |
| Somerset, . . . . .     | Somerset, . . . . .                       | 1,327                             | 30.06                           | 30.54    | 29.83   | 50.2  | 79           | 5     | 24       | 29    | 62.3             | 40.8             | 21.5         | 36    | 29     | 12    |
| Tioga, . . . . .        | Wellsboro, . . . . .                      | 450                               | 30.08                           | 30.61    | 29.74   | 47.8  | 88           | 3     | 22       | 29    | 61.1             | 34.7             | 27.4         | 38    | 13     | 19    |
| Union, . . . . .        | Lewistown, . . . . .                      | 1,450                             | 30.08                           | 30.61    | 29.74   | 47.8  | 88           | 3     | 22       | 29    | 61.1             | 34.7             | 27.4         | 38    | 13     | 19    |
| Warren, . . . . .       | Columbus, . . . . .                       | 1,410                             | 30.08                           | 30.61    | 29.74   | 47.8  | 88           | 3     | 22       | 29    | 61.1             | 34.7             | 27.4         | 38    | 13     | 19    |
| Warren, . . . . .       | Dyberry, . . . . .                        | 1,100                             | 30.08                           | 30.61    | 29.74   | 47.8  | 88           | 3     | 22       | 29    | 61.1             | 34.7             | 27.4         | 38    | 13     | 19    |
| Wayne, . . . . .        | Honesdale, . . . . .                      | 1,000                             | 30.08                           | 30.61    | 29.74   | 47.8  | 88           | 3     | 22       | 29    | 61.1             | 34.7             | 27.4         | 38    | 13     | 19    |
| Wayne, . . . . .        | Ligonier, . . . . .                       | 1,750                             | 30.08                           | 30.61    | 29.74   | 47.8  | 88           | 3     | 22       | 29    | 61.1             | 34.7             | 27.4         | 38    | 13     | 19    |
| Westmoreland, . . . . . | South Eaton, . . . . .                    | 680                               | 30.08                           | 30.61    | 29.74   | 47.8  | 88           | 3     | 22       | 29    | 61.1             | 34.7             | 27.4         | 38    | 13     | 19    |
| Westmoreland, . . . . . | York, . . . . .                           | 385                               | 30.05                           | 30.45    | 29.78   | 48.6  | 83           | 4     | 22       | 29    | 63.3             | 36.3             | 19.3         | 33    | 31     | 1     |
| Wyoming, . . . . .      | York, . . . . .                           | 385                               | 30.05                           | 30.45    | 29.78   | 48.6  | 83           | 4     | 22       | 29    | 63.3             | 36.3             | 19.3         | 33    | 31     | 1     |
| York, . . . . .         | York, . . . . .                           | 385                               | 30.05                           | 30.45    | 29.78   | 48.6  | 83           | 4     | 22       | 29    | 63.3             | 36.3             | 19.3         | 33    | 31     | 1     |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.         | STATION.                       | Relative humidity. | Dew point. | PRECIPITATION. |       |       | NUMBER OF DAYS.           |        |       | WIND.   |         |         |         |
|-----------------|--------------------------------|--------------------|------------|----------------|-------|-------|---------------------------|--------|-------|---------|---------|---------|---------|
|                 |                                |                    |            | Total.         | Inch. | Dist. | Number of days rain-fall. | Clear. | Fair. | Cloudy. | 1 a. m. | 2 p. m. | 9 p. m. |
|                 |                                |                    |            |                |       |       |                           |        |       |         |         |         |         |
|                 |                                |                    |            |                |       |       |                           |        |       |         |         |         |         |
| Allegheny.*     | Pittsburgh.                    | 66.6               | 40         | 1.53           |       | T     | 10                        | 9      | 14    | 8       | W       |         | W       |
| Berks.          | Hamburg.                       |                    |            | 2.69           |       |       | 8                         | 6      | 14    | 11      |         |         |         |
| Berks.          | Reading.                       |                    |            | 2.54           |       |       |                           |        |       |         |         |         |         |
| Blair.*         | Altoona.                       | 58.5               | 39         | 3.30           |       | T     | 9                         | 8      | 10    | 13      | NW      | NW      | NW      |
| Blair.          | Blue Knob.                     | 75.3               | 41.2       | 2.76           |       |       | 11                        | 13     | 8     | 10      | W       | W       | NW      |
| Blair.          | Holidaysburg.                  | 81.6               | 43.2       | 4.25           |       |       | 16                        | 9      | 10    | 12      | SE      | SW      | NW      |
| Bradford.       | Wysox.                         |                    |            | 4.20           |       | T     | 15                        | 9      | 10    | 11      | NW      | NW      | NE      |
| Bradford.       | Le Roy.                        |                    |            | 2.91           |       |       | 9                         | 13     | 9     | 5       | N       | NE      | W       |
| Bucks.          | Hummertville.                  |                    |            | 3.68           |       |       | 9                         | 5      | 11    | 11      | NE      | NE      | NE      |
| Bucks, 27 days. | Quakertown.                    | 80.2               | 43.7       | 2.96           |       | T     | 10                        | 9      | 11    | 11      | SE      | NE      | W       |
| Bucks.          | Johnstown.                     |                    |            | 2.80           |       | T     | 10                        | 9      | 11    | 11      | S       | E       | W       |
| Cambria.*       | Emporium.                      | 46.5               | 29.7       | 2.89           |       |       | 8                         | 11     | 7     |         |         |         |         |
| Carbon.*        | Mauch Chunk (18 days).         |                    |            | 2.89           |       |       | 12                        | 7      | 11    | 13      | W       | W       | W       |
| Centre.         | State College.                 | 73.7               | 39.6       | 4.38           |       |       | 11                        | 15     | 4     | 12      | NW      | NW      | NW      |
| Chester.        | West Chester.                  | 70                 | 42         | 3.40           |       |       | 17                        | 9      | 11    | 12      | NW      | NW      | NW      |
| Chester.        | Coatesville.                   |                    |            | 3.16           |       |       | 9                         | 8      | 17    | 16      | NW      | NW      | NW      |
| Chester.*       | Kennett Square.                |                    |            | 3.32           |       |       | 9                         | 8      | 7     | 16      | NW      | NW      | NW      |
| Chester.        | Phoenixville.                  | 79.8               | 44.9       | 3.17           |       |       | 11                        | 11     | 9     | 9       | W       | W       | W       |
| Chester.        | Green Hills.                   |                    |            | 3.73           |       |       | 13                        | 12     | 10    | 9       | W       | W       | W       |
| Chester.        | Lock Haven.                    |                    |            | 3.73           |       |       | 13                        | 12     | 10    | 9       | W       | W       | W       |
| Chester.        | Merdiville.                    |                    |            | 3.73           |       |       | 13                        | 12     | 10    | 9       | W       | W       | W       |
| Crawford.       | Carlisle.                      | 83.4               | 45.8       | 3.51           |       |       | 8                         | 12     | 7     | 12      | N       | N       | N       |
| Cumberland.     | Harrisburg.                    | 70.8               | 41.7       | 2.87           |       |       | 11                        | 11     | 5     | 14      | NW      | NW      | NW      |
| Dauphin.*       | Swarthmore College.            | 74.8               | 43.9       | 3.75           |       |       | 6                         | 11     | 12    | 8       | N       | N       | N       |
| Delaware.       | Erie.*                         | 68                 | 40         | 4.53           |       |       | 11                        | 8      | 7     | 12      | S       | S       | S       |
| Erie.*          | Uniontown.                     |                    |            | 3.30           |       |       | 9                         | 13     | 6     | 10      | N       | N       | N       |
| Fulton.         | McConnellsburg.                | 79.1               | 43.8       | 3.13           |       |       | 6                         | 15     | 7     | 9       | N       | N       | N       |
| Huntington.     | Uniontown.                     |                    |            | 3.13           |       |       | 6                         | 15     | 7     | 9       | N       | N       | NW      |
| Lancaster.      | Lebanon.                       | 84.3               | 47         | 3.05           |       |       | 9                         | 11     | 11    | 9       | NW      | NW      | NW      |
| Lebanon.        | Franklin and Marshall College. |                    |            | 3.05           |       |       | 9                         | 11     | 11    | 9       | SE      | SE      | SE      |
| Lebanon.        | New Castle.                    |                    |            | 3.05           |       |       | 10                        | 11     | 9     | 11      | SW      | SW      | SW      |
| Lebanon.        | Lebanon.                       |                    |            | 3.05           |       |       | 9                         | 11     | 11    | 9       | SW      | SW      | SW      |
| Lehigh.         | Coopersburg.                   | 78.7               | 44.5       | 3.14           |       | T     | 6                         | 12     | 7     | 12      | NW      | NW      | NW      |
| Luzerne.        | Drifton.                       |                    |            | 2.74           |       |       | 8                         | 11     | 4     | 16      | NW      | NW      | NW      |
| Luzerne.*       | Wilkes-Barre.                  |                    |            | 1.63           |       |       | 8                         | 11     |       |         |         |         | NW      |

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY         | STATION                          | PRECIPITATION. |       |       | Relative humidity. | Dew point. | NUMBER OF DAYS            |        |       | WIND.   |                        |         |         |         |
|----------------|----------------------------------|----------------|-------|-------|--------------------|------------|---------------------------|--------|-------|---------|------------------------|---------|---------|---------|
|                |                                  | Total.         | 15th. | 31st. |                    |            | Number of days rain-fall. | Clear. | Fair. | Cloudy. | PREVAILING DI-RECTION. |         |         |         |
|                |                                  |                |       |       |                    |            |                           |        |       |         | DEPTH OF SNOW.         | 7 a. m. | 2 p. m. | 9 p. m. |
|                |                                  |                |       |       |                    |            |                           |        |       |         |                        |         |         |         |
| McKean.        | Smethport.                       | 3.95           | .     | .     | 77.9               | 45         | 4                         | 16     | 6     | 9       | W                      | W       | W       |         |
| Montgomery.    | Pottstown.                       | 2.57           | .     | .     | 70.3               | 43.2       | 9                         | 14     | 7     | 10      | NW                     | NW      | NW      |         |
| Philadelphia.* | Philadelphia Weather Bureau.     | 3.19           | .     | .     | 78.8               | 45         | 10                        | 11     | 12    | 8       | NW                     | NE      | NW      |         |
| Philadelphia.  | Philadelphia, Centennial avenue. | 4.46           | .     | .     | 84                 | 45         | 8                         | 14     | 10    | 7       | W                      | W       | W       |         |
| Schuylkill.    | Girardville.                     | 2.45           | .     | .     | 89.3               | 43.1       | 6                         | 12     | 11    | 8       | NW                     | NW      | NW      |         |
| Snyder.        | Selinsgrove.                     | 2.44           | .     | .     | 82.2               | 68.4       | 5                         | 12     | 11    | 16      | NW                     | NW      | NW      |         |
| Somerset.      | Somerset.                        | 3.71           | .     | .     | 61.1               | 40.5       | 4                         | 14     | 9     | 11      | N                      | NW      | NW      |         |
| Tioga.         | Wellsboro.                       | 1.95           | .     | .     | 81.1               | 44.7       | 8                         | 12     | 11    | 8       | NE                     | NE      | NE      |         |
| Union.*        | Lewisburg.                       | 3.41           | .     | .     | 81.1               | 44.7       | 11                        | 8      | 12    | 11      | NW                     | SW      | SW      |         |
| Warren.        | Columbus.                        | 3.74           | .     | .     | 81.1               | 44.7       | 8                         | 12     | 11    | 14      | NW                     | NW      | NW      |         |
| Wayne.         | Dyberry.                         | 3.74           | .     | .     | 61.1               | 40.5       | 9                         | 12     | 11    | 8       | NW                     | NW      | NW      |         |
| Westmoreland.  | Honesdale.                       | .88            | .     | .     | 81.1               | 44.7       | 6                         | 12     | 11    | 8       | NW                     | NW      | NW      |         |
| Wyoming.*      | Ligonier.                        | 3.71           | .     | .     | 81.1               | 44.7       | 9                         | 12     | 11    | 8       | NW                     | NW      | NW      |         |
| York.*         | South Eaton.                     | 3.20           | .     | .     | 81.1               | 44.7       | 10                        | 15     | 8     | 8       | NW                     | NW      | NW      |         |
| York.          | York.                            | 3.20           | .     | .     | 81.1               | 44.7       | 10                        | 15     | 8     | 8       | NW                     | NW      | NW      |         |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at 12 noon.

## PRECIPITATION DURING OCTOBER, 1891.

| DATE. | Altoona. | Blue Knob. | Brower's Lock. | Carlisle. | Catesville. | Columbus. | Coopersburg. | Doylesstown. | Dyberry. | Emporium. | Erle * | Forks of Neshaminy<br>(Bush Valley). | Frederick. | Girardville. | Gramplan Hills. | Hamburg. | Harrisburg. | Hollidaysburg. | Honesdale. | Hunneville. |
|-------|----------|------------|----------------|-----------|-------------|-----------|--------------|--------------|----------|-----------|--------|--------------------------------------|------------|--------------|-----------------|----------|-------------|----------------|------------|-------------|
| 1.    |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 2.    |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 3.    |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 4.    |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 5.    |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 6.    |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 7.    | .88      | 1.50       | .10            | 1.20      | .53         | .29       | .28          | .29          | T        | 1.07      | 1.15   | .34                                  | .26        | .12          | .03             | .03      | .01         | .12            | .57        |             |
| 8.    | .27      |            | .42            | .43       | .84         | .06       | .37          | .45          | .49      | .10       | .01    | .43                                  | .34        | .11          | 1.22            | .15      | .87         | 1.25           | 1.71       |             |
| 9.    |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             | .05            |            |             |
| 10.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 11.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 12.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 13.   |          |            |                | .02       |             |           |              | .03          | T        |           | .07    | .05                                  |            |              | .04             | .01      |             |                |            |             |
| 14.   |          |            |                |           |             | .09       |              |              |          | .15       | .20    |                                      |            |              | .18             |          |             |                |            |             |
| 15.   |          | .10        |                |           |             | .09       |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 16.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 17.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 18.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 19.   | .22      | .60        | 1.48           | .46       | .11         | .05       | 1.25         | 1.96         | .05      | .39       | .02    | .07                                  | 1.37       | .52          | .74             | .10      | 1.08        | .73            |            |             |
| 20.   | .45      | .50        | 1.48           | 1.83      | .83         | .68       | 1.25         | 1.96         | 1.40     | .68       | .58    | 1.58                                 | 1.37       | 1.10         | 1.12            | 1.15     | 1.17        | 1.75           | .80        |             |
| 21.   | .35      |            | .24            | .07       | .24         | .07       | .47          | .17          | .17      | .17       | .02    | .04                                  | .05        | .10          | .40             | .11      | .06         | .05            |            |             |
| 22.   | .07      | .20        | .87            | .20       | .72         |           | .73          | 1.00         |          |           |        | .90                                  | .75        | .45          | .06             | .79      | .43         | .11            |            |             |
| 23.   |          |            |                |           |             |           |              |              | .02      |           | T      |                                      |            |              |                 |          |             |                |            |             |
| 24.   |          |            |                |           |             |           |              |              | T        |           |        |                                      |            |              |                 |          |             |                | .01        |             |
| 25.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 26.   |          |            |                |           | .06         | .40       | .07          | .40          | .10      | .44       | .06    | .07                                  | .24        | .43          | .24             | .05      | .12         | .15            | .19        |             |
| 27.   | .30      | .10        | .24            | .14       |             | .18       | .04          | .09          | .09      |           | .16    | .20                                  | .21        |              |                 | .07      | .04         | .05            |            |             |
| 28.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 29.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 30.   |          |            |                |           |             |           |              |              |          |           |        |                                      |            |              |                 |          |             |                |            |             |
| 31.   | .254     | 3.30       | 3.08           | 3.51      | 3.46        | 1.95      | 2.74         | 4.22         | 3.41     | 3.48      | 1.78   | 3.68                                 | 3.22       | 3.77         | 3.17            | 2.69     | 2.87        | 2.76           | 3.74       | 2.91        |

\* United States weather bureau station.



## PRECIPITATION FOR OCTOBER, 1891—Continued.

| DATE. | Huntingdon. | Johnstown. | Kennett Square. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Ligonier. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Ottsville. | Philadelphia.* | Philadelphia. | Phoenixville. | Pittsburgh. | Point Pleasant. |
|-------|-------------|------------|-----------------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|------------|----------------|---------------|---------------|-------------|-----------------|
| 1.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 2.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 3.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 4.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 5.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 6.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 7.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 8.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 9.    |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 10.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 11.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 12.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 13.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 14.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 15.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 16.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 17.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 18.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 19.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 20.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 21.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 22.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 23.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 24.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 25.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 26.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 27.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 28.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 29.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 30.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |
| 31.   |             |            |                 |           |          |         |            |           |             |              |            |                 |             |            |                |               |               |             |                 |

\* United States weather bureau station.

PRECIPITATION FOR OCTOBER, 1891—Continued.

|     | Pottstown. | Quakertown. | Reading. | Seisholtzville. | Selinsgrove. | Smethport. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellsboro'. | West Chester. | Westtown. | Wilkes-Barre. | Wysox. | York. | Lancaster. |
|-----|------------|-------------|----------|-----------------|--------------|------------|-----------------|-----------|--------------|----------------|-------------|------------|-------------|---------------|-----------|---------------|--------|-------|------------|
| 1.  | .          | .           | .        | .               | .            | .          | .               | .         | .            | T.             | .20         | .16        | .20         | .02           | .         | .             | .02    | .     | .          |
| 2.  | .          | .           | .        | .               | .            | .          | .               | .         | .            | .20            | .16         | 2.01       | 1.20        | .34           | .         | .             | .37    | .20   | .          |
| 3.  | .          | .           | .        | .               | .            | .          | .               | .         | 1.43         | 1.52           | .08         | .40        | .18         | .24           | 1.20      | .             | 1.62   | .61   | .40        |
| 4.  | .          | .           | .        | .               | .            | .          | .               | 1.05      | .49          | .03            | .40         | .18        | .24         | .28           | .         | .             | .05    | .14   | .          |
| 5.  | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 6.  | .70        | .31         | .21      | .56             | 1.01         | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 7.  | .          | .29         | .36      | .40             | 1            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 8.  | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 9.  | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 10. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 11. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 12. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 13. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .01            | .           | .          | .02         | .             | .         | .27           | .06    | .04   | .          |
| 14. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .05            | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 15. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 16. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 17. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 18. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 19. | .          | .           | .        | .               | .            | .          | .               | .30       | .            | .67            | .33         | .09        | .           | .69           | .         | .             | .16    | 1.38  | .74        |
| 20. | .          | T           | .01      | .13             | .47          | .04        | .               | .30       | .            | 1.33           | 2.13        | .          | .96         | 1.67          | .         | .             | 1.03   | .21   | .60        |
| 21. | 2          | 1.22        | 1.30     | 1.73            | 1.00         | 2.21       | .               | .         | 1.39         | .09            | .03         | .          | .           | .05           | .         | .             | .02    | .10   | .          |
| 22. | .          | .10         | .05      | .12             | .            | .          | .               | .         | .18          | .12            | .80         | .42        | .           | .71           | .         | .             | .57    | .96   | .          |
| 23. | .          | .80         | .74      | .86             | .32          | .90        | .               | .30       | .            | .              | .           | .          | .           | .04           | .         | .             | .07    | .     | .          |
| 24. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 25. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .16           | .      | .     | .          |
| 26. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .33            | .33         | .21        | .           | .07           | .         | .             | .09    | .01   | .03        |
| 27. | .          | .12         | .12      | .               | .04          | .18        | .               | .         | .12          | .01            | .23         | .08        | .           | .13           | .         | .             | .09    | .14   | .          |
| 28. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 29. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .           | .             | .         | .             | .      | .     | .          |
| 30. | .          | .           | .        | .               | .            | .          | .               | .         | .            | .              | .           | .          | .02         | .             | .         | .             | .      | .     | .          |
| 31. | 3.95       | 2.96        | 2.99     | 3.83            | 4.46         | .          | 4.37            | 2.45      | 3.71         | 4.38           | 3.75        | 2.99       | 2.44        | 3.40          | .         | 1.63          | 4.43   | 3.20  | 3.05       |

For November, 1891.

*Temperature.*

The mean temperature for November, 1891, was  $39^{\circ}.6$ , which is about the normal, and  $1^{\circ}.9$  below the corresponding month of last year.

The mean of the daily maxima and minima temperatures,  $49^{\circ}.1$  and  $30^{\circ}.3$ , gives an average daily range of  $18^{\circ}.8$ , and a monthly mean of  $39^{\circ}.7$ .

Highest monthly mean,  $44^{\circ}.9$ , at Altoona.

Lowest monthly mean,  $33^{\circ}.1$ , at Blue Knob.

Highest temperature recorded during the month,  $76^{\circ}.0$ , on the 9th, at Pittsburgh.

Lowest temperature recorded during the month,  $6^{\circ}.0$ , on the 30th, at Dyberry.

Greatest local monthly range,  $66^{\circ}.0$ , at Ligonier.

Least local monthly range,  $37^{\circ}.0$ , at Selinsgrove.

Greatest daily range,  $46^{\circ}.0$ , at Coatesville, on the 9th; Lebanon, on the 22d and Dyberry on the 8th.

Least daily range,  $0^{\circ}.0$ , at Columbus, on the 17th.

From January 1, 1891, to November 30, 1891, the excess in temperature at Philadelphia was  $180^{\circ}$ , at Erie,  $73^{\circ}$  and at Pittsburgh,  $79^{\circ}$ .

*Barometer.*

The mean pressure for the month, 30.15, is about .10 inch above the normal.

At the United States weather bureau stations, the highest observed was 30.84, at Philadelphia, on the 16th, and the lowest 29.82, at Erie, on the 23d.

*Precipitation.*

The average rainfall, 2.65 for the month, is a deficiency of nearly one inch.

The largest monthly totals in inches were, Columbus, 5.70; Girardville, 5.12 and Drifton, 4.08.

The least were, Lancaster, 1.09; Reading, 1.38; Westtown, 1.41.

The heaviest rainfall occurred on the 11th, 17th and 23d.

The snowfall was light and at most stations too small for measurement.

The largest totals were Blue Knob, 11.0 inches; Grampian Hills, 6.0 inches; Wellsboro', 5.5 inches and New Castle, 4.0 inches.

*Wind and Weather.*

The prevailing direction of the wind was from the northwest.

Average number: Rainy days, 9; clear days, 9; fair days, 8; cloudy days, 13.

| COUNTY.      | STATION.                          | Elevation above sea level<br>(feet.) | BAROMETER REDUCED<br>TO SEA LEVEL. |          |         |       | TEMPERATURE. |       |          |       |       |              |
|--------------|-----------------------------------|--------------------------------------|------------------------------------|----------|---------|-------|--------------|-------|----------|-------|-------|--------------|
|              |                                   |                                      | Mean.                              | Highest. | Lowest. | Mean. | MAXIMUM.     |       | MINIMUM. |       | Mean. | DAILY RANGE. |
|              |                                   |                                      |                                    |          |         |       | Highest.     | Date. | Lowest.  | Date. |       |              |
| Allegheny.*  | Pittsburgh.                       | 847                                  | 30.15                              | 30.64    | 29.26   | 42    | 57           | 6     | 16       | 18    | 49.6  | 32           |
| Berks.*      | Hamburg.                          | 380                                  |                                    |          | 29.26   | 39.8  | 63           | 28    | 13       | 30    | 49.5  | 40.4         |
| Berks.†      | Reading.                          | 280                                  |                                    |          |         | 40.1  |              |       |          |       | 30.1  | 30.1         |
| Blair.       | Altoona.                          | 1,181                                |                                    |          |         | 44.9  |              |       |          |       | 35    | 8            |
| Blair.       | Stone Knob.                       | 2,500                                |                                    |          |         | 33.1  | 63           | 9     | 11       | 30    | 53.6  | 36.2         |
| Blair.       | Blue Springs.                     | 347                                  |                                    |          |         | 38.6  | 69           | 9     | 9        | 19    | 40.8  | 26.9         |
| Bradford.    | Wysox.                            | 247                                  | 30.14                              | 30.74    | 29.2    | 37.3  | 64           | 23    | 14       | 30    | 45.8  | 28.2         |
| Bradford.    | Le Roy.                           | 478                                  |                                    |          |         | 36.4  | 61           | 23    | 8        | 30    | 43.8  | 23.1         |
| Bucks.       | Hulmeville.                       | 1,400                                | 30.19                              | 30.85    | 29.29   | 42.9  | 66           | 10    | 13       | 30    | 51.6  | 31.3         |
| Bucks.       | Forks of Neshaminy (Rush Valley). |                                      |                                    |          |         | 38.6  | 66           | 12    | 10       | 30    | 50.7  | 35.1         |
| Bucks.       | Quakertown.                       | 536                                  | 30.18                              | 30.79    | 29.30   | 38.6  | 66           | 12    | 10       | 30    | 50.7  | 35.1         |
| Cambria.*    | Johnstown.                        | 1,184                                | 30.15                              | 30.76    | 29.40   | 40.3  | 69           | 8     | 10       | 19    | 49.6  | 30.3         |
| Cameron.     | Emporium.                         | 1,630                                |                                    |          |         | 38.8  | 66           | 9     | 9        | 19    | 47.3  | 29.3         |
| Chester.     | State College.                    | 1,191                                | 30.12                              | 30.76    | 29.16   | 37.5  | 62           | 11    | 9        | 30    | 45.6  | 28.4         |
| Chester.     | Verona.                           | 455                                  | 30.17                              | 30.79    | 29.25   | 41.1  | 65           | 10    | 12       | 30    | 50.6  | 32.9         |
| Chester.     | Chester.                          | 380                                  |                                    |          |         | 40.3  | 69           | 12    | 11       | 31    | 52.4  | 28.2         |
| Chester.     | Kennett Square.                   | 183                                  | 30.19                              | 30.82    | 29.36   | 40.1  |              |       |          |       |       |              |
| Chester.     | Phoenixville.                     | 183                                  | 30.19                              | 30.82    | 29.36   | 40.1  |              |       |          |       |       |              |
| Chester.     | Westtown (24 days).               | 350                                  |                                    |          |         | 34.5  | 65           | 12    | 13       | 30    | 52    | 30.8         |
| Clearfield.  | Grampian Hills.                   | 1,450                                | 30.05                              | 30.56    | 29.21   | 34.2  | 65           | 10    | 14       | 30    | 50    | 33.6         |
| Clinton.     | Lock Haven.                       | 560                                  |                                    |          |         | 39.4  | 67           | 6     | 10       | 30    | 47.6  | 17.3         |
| Crawford.    | Meadville.                        | 1,300                                |                                    |          |         | 38.8  | 70           | 9     | 9        | 18    | 47.5  | 30.2         |
| Cumberland.  | Carlisle.                         | 570                                  |                                    |          |         | 38.4  | 66           | 8     | 10       | 13    | 50.7  | 30.4         |
| Cumberland.  | Harrisburg.                       | 361                                  | 30.19                              | 30.82    | 29.39   | 41.1  | 68           | 23    | 10       | 30    | 50.9  | 33.3         |
| Delaware.    | Swarthmore College.               | 190                                  | 30.16                              | 30.72    | 29.49   | 41    | 67           | 10    | 13       | 30    | 52.4  | 32.5         |
| Eliz.*       | Eliz.                             | 681                                  | 30.06                              | 30.60    | 28.92   | 40    | 73           | 9     | 18       | 19    | 46.2  | 35.7         |
| Fayette.     | Uniontown.                        | 1,575                                |                                    |          |         | 42.5  | 70           | 16    | 11       | 19    | 50.9  | 34.2         |
| Fulton.      | McConnellsburg (23 days).         | 530                                  |                                    |          |         | 39.1  | 63           | 9     | 13       | 19    | 51.8  | 29.3         |
| Huntingdon.* | Huntingdon.                       | 630                                  |                                    |          |         | 39.1  | 63           | 9     | 13       | 19    | 51.8  | 29.3         |
| Lancaster.*  | Lancaster.                        | 413                                  | 30.21                              | 30.72    | 29.06   | 41.8  | 64           | 10    | 13       | 30    | 48.4  | 30.2         |
| Lawrence.    | New Castle.                       | 192                                  |                                    |          |         | 41.8  | 64           | 9     | 13       | 30    | 50.1  | 31.1         |
| Lebanon.     | Lebanon.                          | 474                                  | 30.18                              | 30.80    | 29.20   | 39.5  | 62           | 23    | 13       | 30    | 50.1  | 31.1         |
| Lehigh.      | Coopersburg.                      | 220                                  |                                    |          |         | 39.7  | 64           | 12    | 13       | 30    | 50.5  | 31.1         |
| Luzerne.*    | Darton (25 days).                 | 1,655                                | 30.17                              | 30.53    | 29.38   | 31.9  | 57           | 23    | 30       | 30    | 44.9  | 24.9         |
|              |                                   |                                      |                                    |          |         |       |              |       |          |       |       | 39           |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at noon.

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.       | STATION.                         | Elevation above sea level (feet). | BAROMETER REDUCED TO SEA LEVEL. |          |         |       | TEMPERATURE. |         |          |           |                  |                  |              |        |       |    |
|---------------|----------------------------------|-----------------------------------|---------------------------------|----------|---------|-------|--------------|---------|----------|-----------|------------------|------------------|--------------|--------|-------|----|
|               |                                  |                                   | HIGHEST.                        |          | Lowest. | Mean. | MAXIMUM.     |         | MINIMUM. |           | Mean of maximum. | Mean of minimum. | DAILY RANGE. |        |       |    |
|               |                                  |                                   | Mean.                           | Highest. |         |       | Date.        | Lowest. | Date.    | Greatest. |                  |                  | Date.        | Least. | Date. |    |
| Luzerne.*     | Wilkes-Barre.                    | 575                               | ...                             | ...      | ...     | 40.4  | 66           | 6       | 18       | 30        | 50.8             | 29.6             | 21.2         | 39     | 8     | 29 |
| McKean.       | Smethport.                       | 1,500                             | ...                             | ...      | ...     | 42.5  | 66           | 10      | 14       | 30        | 52.8             | 32.6             | 20.3         | 33     | 17    | 23 |
| Montgomery.   | Pottstown.                       | 130                               | ...                             | ...      | ...     | 44.2  | 66           | 10      | 15       | 30        | 51.6             | 32.6             | 14.7         | 37     | 5     | 23 |
| Philadelphia. | Philadelphia Weather Bureau.     | 117                               | 30.20                           | 30.84    | 29.38   | 44.7  | 67           | 10      | 15       | 30        | 53.3             | 35.7             | 17.6         | 23     | 17    | 23 |
| Philadelphia. | Philadelphia, Centennial avenue. | 120                               | 30.20                           | 30.84    | 29.37   | 44.7  | 67           | 10      | 15       | 30        | 53.3             | 35.7             | 17.6         | 23     | 17    | 23 |
| Schuylkill.   | Girardville.                     | 1,000                             | 30.13                           | 30.67    | 29.37   | 37.2  | 63           | 10      | 11       | 30        | 46.5             | 29.2             | 17.3         | 30     | 17    | 23 |
| Snyder.       | Selinsgrove.                     | 445                               | 30.19                           | 30.73    | 29.43   | 39.6  | 56           | 22      | 20       | 30        | 48.7             | 37.2             | 18.5         | 37     | 17    | 23 |
| Somerset.     | Somerset.                        | 2,250                             | ...                             | ...      | ...     | 38.2  | 63           | 8       | 7        | 13        | 45.5             | 27.1             | 19.4         | 37     | 5     | 15 |
| Tioga.        | Wellsboro'.                      | 1,357                             | 30.12                           | 30.74    | 29.17   | 34.4  | 64           | 9       | 10       | 30        | 43.2             | 26.1             | 17.1         | 30     | 8     | 15 |
| Union.        | Lewisboro'.                      | 1,450                             | ...                             | ...      | ...     | 40.6  | 68           | 8       | 13       | 30        | 49.1             | 32.1             | 17           | 30     | 6     | 15 |
| Warren.       | Columbus.                        | 1,410                             | ...                             | ...      | ...     | 37.4  | 63           | 9       | 10       | 19        | 44.2             | 30.6             | 13.6         | 30     | 4     | 23 |
| Wayne.        | Dyberry.                         | 1,100                             | ...                             | ...      | ...     | 37.4  | 63           | 8       | 6        | 30        | 45.1             | 24.8             | 22.8         | 46     | 0     | 11 |
| Westmoreland. | Honesdale.                       | 1,000                             | ...                             | ...      | ...     | 36.3  | 60           | 17      | 8        | 30        | 46.1             | 24.8             | 18.2         | 34     | 4     | 11 |
| York.*        | Ligonier.                        | 1,750                             | ...                             | ...      | ...     | 41    | 73           | 9       | 7        | 19        | 53.8             | 28.3             | 25.5         | 35     | 19    | 22 |
| York.*        | South Eaton.                     | 650                               | ...                             | ...      | ...     | 36.2  | 64           | 9       | 13       | 30        | 49               | 29.4             | 19.6         | 37     | 8     | 23 |
| York.*        | York.                            | 385                               | 30.11                           | 30.72    | 29.35   | 39.4  | 66           | 10      | 10       | 30        | 52               | 26.7             | 25.3         | 40     | 8     | 11 |

\* Observations taken at 8 a. m. and 8 p. m.



## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY       | STATION.                         | PRECIPITA-<br>TION. | NUMBER OF DAYS     |            |        |       | WIND.                      |         |         |    |
|--------------|----------------------------------|---------------------|--------------------|------------|--------|-------|----------------------------|---------|---------|----|
|              |                                  |                     | Relative humidity. | Dew point. | Total. | Snow. | PREVAILING DIREC-<br>TION. |         |         |    |
|              |                                  |                     |                    |            |        |       | 7 a. m.                    | 2 p. m. | 9 p. m. |    |
| Allegheny,*  | Pittsburgh,                      | 66                  | 30.3               | 2.61       | 14     | 3     | 7                          | 20      | SE      | SW |
| Berks,*      | Hamburg,                         |                     |                    | 1.48       | 6      | 5     | 15                         | 12      |         |    |
| Berks,†      | Reading,                         |                     |                    | 1.38       |        | 11    |                            |         |         |    |
| Blair,       | Altoona,                         | 59.3                | 31                 | 1.89       | 9      |       |                            |         |         |    |
| Blair,       | Blue Knob,                       |                     |                    | 2.29       |        | 11    |                            | 14      | NW      | NW |
| Bradford,    | Holidaysburg,                    | 74.8                | 31.5               | 2.75       | 8      | 4     | 4                          | 18      | W       | W  |
| Bradford,    | Wysox,                           | 73.4                | 32.5               | 2.73       | 1      | 7     | 4                          | 19      | E       | SE |
| Bucks,       | Le Roy,                          |                     |                    | 3.24       | 3      | 6     | 4                          | 20      | SW      | SW |
| Bucks,       | Hulmeville,                      |                     |                    | 2.02       |        | 13    | 6                          | 5       | NW      | N  |
| Bucks,       | Forks of Nesaminy (Rush Valley), |                     |                    | 2.04       |        | 15    | 8                          | 10      | SW      | N  |
| Bucks,       | Quakertown,                      | 87                  | 33.5               | 2.31       |        | 10    | 14                         | 5       | SW      | NW |
| Bucks,       | Quakertown,                      |                     |                    | 2.31       |        | 15    | 13                         | 17      | SW      | NW |
| Camden,*     | Emportum,                        |                     |                    | 4.01       |        | 12    | 7                          | 3       | W       | W  |
| Centre,      | State College,                   | 76.3                | 32                 | 2.91       | 2      | 7     | 2                          | 11      | W       | W  |
| Chester,     | West Chester,                    | 70                  | 31.5               | 2.29       | 11     | 17    | 3                          | 10      | NW      | NW |
| Chester,     | Coatesville,                     |                     |                    | 1.78       | 9      | 14    | 6                          | 10      | W       | W  |
| Chester,*    | Kennett Square,                  |                     |                    | 2.29       | 11     | 13    | 5                          | 12      | NW      | NW |
| Chester,     | Knoxville,                       | 80.2                | 29.8               | 1.69       | 12     | 10    | 6                          | 14      | NW      | NW |
| Chester,     | Westtown (29 days),              |                     |                    | 3.35       | 6      | 14    | 3                          | 12      | W       | W  |
| Chester,     | Grampian Hills,                  |                     |                    | 2.72       |        | 9     | 13                         | 15      | W       | W  |
| Clinton,     | Lock Haven,                      |                     |                    | 1.70       |        | 10    | 11                         | 13      | SE      | NW |
| Crawford,    | Meadville,                       |                     |                    | 1.95       |        | 12    | 18                         | 9       | W       | NW |
| Cumberland,  | Carlisle,                        | 84.5                | 34.5               | 1.62       |        | 6     | 14                         | 6       | NW      | NW |
| Dauphin,*    | Harrisburg,                      | 69.1                | 30.3               | 1.62       |        | 20    | 2                          | 22      | S       | S  |
| Delaware,    | Swatmore College,                | 77.3                | 34.9               | 3.99       |        | 10    | 1                          | 10      | W       | W  |
| Erie,*       | Erie,                            | 73                  | 31                 | 3.99       |        | 10    | 11                         | 9       | W       | NW |
| Erie,*       | Uniontown,                       |                     |                    | 3.65       |        | 10    | 1                          | 10      | W       | NW |
| Fayette,     | McConnellsburg (23 days),        | 78.8                | 35.6               | 3.03       |        | 5     | 10                         | 6       | W       | W  |
| Fayette,     | Lancaster,                       |                     |                    | 2.89       | 3      | 6     | 18                         | 7       | NW      | NW |
| Harrisburg,* | Harrisburg,                      |                     |                    | 1.09       | 2      | 7     | 12                         | 16      | SE      | SE |
| Lancaster,   | Lancaster,                       | 81.6                | 34.4               | 3.02       |        | 5     | 11                         | 13      | SE      | SE |
| Lawrence,    | New Castle,                      |                     |                    | 2.87       | 4      | 7     | 4                          | 10      | SW      | SW |
| Lebanon,     | Lebanon,                         | 76.7                | 31.1               | 2.34       | 0.3    | 7     | 7                          | 13      | NW      | NW |
| Lehigh,      | Coopersburg,                     |                     |                    | 2.27       |        | 10    | 11                         | 8       | NW      | NW |
| Luzerne,*    | Drifton (23 days),               | 72.6                | 30.9               | 4.98       | 0.2    | 5     | 8                          | 12      |         |    |

\* Observations taken at 8 a. m. and 8 p. m.

† Observations taken at noon

## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY | STATION. | PRECIPITATION. |        |       |            |        |       |         |                       |         |         | WIND |  |  |
|--------|----------|----------------|--------|-------|------------|--------|-------|---------|-----------------------|---------|---------|------|--|--|
|        |          | Dew point.     | Total. | Snow. | With rain. | Clear. | Fair. | Cloudy. | PREVAILING DIRECTION. |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         | 7 a. m.               | 2 p. m. | 9 p. m. |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |
|        |          |                |        |       |            |        |       |         |                       |         |         |      |  |  |

\* Observations taken at 8 a. m. and 8 p. m.

PRECIPITATION FOR NOVEMBER, 1891.

|     | Altoona. | Blue Knob. | Brower's Lock. | Carlisle. | Coatesville. | Columbus. | Coopersburg. | Doylstown. | Dyberry. | Emporium. | Forks of Neshaminy<br>(Kush Valley.) | Frederick. | Girardville. | Grampian Hills. | Hamburg. | Harrisburg.* | Hollidaysburg. | Honesdale. | Hulmeville. |
|-----|----------|------------|----------------|-----------|--------------|-----------|--------------|------------|----------|-----------|--------------------------------------|------------|--------------|-----------------|----------|--------------|----------------|------------|-------------|
| 1.  | .04      |            |                | .03       |              |           |              |            |          | .05       | .10                                  |            |              |                 |          |              |                |            |             |
| 2.  |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 3.  |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 4.  |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 5.  | .08      | .20        | .12            | .18       | .19          | .03       | .08          |            | .16      |           | .08                                  | .07        | .08          | .18             | .04      | .18          | .20            |            |             |
| 6.  |          |            |                | .08       |              |           |              |            |          |           |                                      |            |              |                 |          | .01          |                |            |             |
| 7.  |          |            |                |           |              |           |              |            |          |           | .01                                  |            |              |                 |          |              |                |            |             |
| 8.  |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 9.  |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 10. | .48      | .09        | .31            | .87       | .07          | .04       | .61          | .52        | .05      | .25       | .01                                  | .35        | .90          | 1.06            | .57      | .98          | 1.07           | .51        | .55         |
| 11. |          |            |                | .33       | .33          | .53       |              |            | .20      | .50       | .52                                  | .40        | .08          | .16             |          | .01          |                | .07        |             |
| 12. |          |            |                | .03       | .01          |           |              |            |          | .27       |                                      |            |              |                 |          |              |                |            |             |
| 13. |          |            |                | .03       |              |           |              |            |          | .04       |                                      |            |              |                 |          |              |                |            |             |
| 14. |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 15. | .02      | .05        |                | .02       | .10          | .17       | .06          | .10        | .04      |           | .06                                  | .15        | .16          | .03             | .11      | .06          | .01            | .03        |             |
| 16. | .13      | .20        | .39            | .40       | .50          | .59       | .43          | .50        | .12      | .12       | .40                                  | .50        | 1.30         | .30             | .38      | .44          | .28            | .49        | .53         |
| 17. |          |            |                |           |              |           |              |            |          | .13       |                                      |            |              |                 |          |              |                |            |             |
| 18. |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 19. |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 20. |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 21. |          | .10        |                | .04       |              | .01       |              |            | .15      | .04       |                                      |            |              | .12             |          | .01          | .07            |            |             |
| 22. | .09      | .20        |                | .01       |              |           |              |            | .32      | .16       |                                      |            | .34          | .26             |          |              |                |            |             |
| 23. | .42      | .80        | .25            | .01       | .47          | .78       | .41          | .51        | .91      | .51       | .62                                  | .40        | 1.40         | .92             | .34      | .12          | .78            | .27        | .37         |
| 24. | .12      | .20        |                |           |              |           |              |            | .03      | .41       |                                      |            |              | .10             |          |              |                |            |             |
| 25. |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 26. |          | .10        |                | .06       | .06          | .04       | .04          | .04        | .07      | .07       | .17                                  | .06        | .06          | .07             | .11      | .01          | .05            | .08        |             |
| 27. | .01      |            | .18            | .04       | .06          | .06       | .13          | .03        | .03      | .13       | .08                                  | .06        | .08          | .15             |          | .03          |                | .02        | .57         |
| 28. |          |            |                |           |              | .02       |              |            | .03      | .26       | .02                                  | .02        |              |                 |          |              |                |            |             |
| 29. |          | .05        |                |           |              |           |              |            |          |           | .01                                  |            |              |                 |          |              |                |            |             |
| 30. |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
| 31. |          |            |                |           |              |           |              |            |          |           |                                      |            |              |                 |          |              |                |            |             |
|     | 1.89     | 2.29       | 1.86           | 1.70      | 1.73         |           | 2.27         | 1.87       | 1.85     | 4.01      | 3.99                                 | 1.63       | 5.12         | 3.35            | 1.43     | 1.95         | 2.76           | 1.62       | 2.02        |

\* United States weather bureau station.

## PRECIPITATION FOR NOVEMBER, 1891—Continued.

|     | Huntingdon. | Johnstown. | Kennett Square. | Lancaster. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Miconter. | Lock Haven. | Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Ottsville. | Philadelphia.* | Phoenixville. | Pittsburgh. | Point Pleasant. |
|-----|-------------|------------|-----------------|------------|-----------|----------|---------|------------|-----------|-------------|--------------|------------|-----------------|-------------|------------|----------------|---------------|-------------|-----------------|
| 1.  |             |            |                 |            |           |          | .01     |            |           |             |              |            |                 | .02         | .05        | .08            | .12           | .05         |                 |
| 2.  |             |            |                 |            |           |          | .00     | .20        |           |             |              |            | .28             |             |            |                | .01           |             | .12             |
| 3.  |             |            |                 |            |           |          |         |            |           |             |              |            |                 | .01         |            |                |               |             |                 |
| 4.  |             |            |                 |            |           | .10      |         |            | .85       | 1.60        |              |            | 1.06            | .77         | .46        |                | .02           | .07         |                 |
| 5.  |             |            |                 |            |           | .05      | .15     | .30        | .05       |             |              |            |                 |             |            | .02            | .24           | .49         | .02             |
| 6.  | .30         | .11        | .17             | .03        |           | .02      | .07     | .05        | .10       |             |              |            |                 | .30         |            | .42            | .04           | .25         | .53             |
| 7.  |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 8.  |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 9.  |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 10. |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 11. |             |            | .04             |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 12. | 1.02        | .90        | .41             |            | .45       | .02      |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 13. |             | .03        | .05             |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 14. |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 15. |             | .01        |                 | .09        |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 16. |             |            |                 | .08        | .09       | .10      | .09     | .75        | .50       | .24         |              |            |                 | .02         | .65        | .05            | .12           | .02         | .20             |
| 17. | .21         | .13        | .78             | .40        | .43       | .09      | .75     | .08        | .08       |             |              |            |                 | .02         |            | .67            | .60           | .42         | .43             |
| 18. |             | .03        |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 19. |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 20. |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               |             |                 |
| 21. | .10         | .69        |                 |            |           |          | .02     |            | .66       | .03         |              |            |                 |             |            |                |               |             |                 |
| 22. | .21         | .25        |                 |            |           |          | .02     | .06        | .15       | .10         |              |            | .33             |             |            |                |               | .10         |                 |
| 23. | .50         | .70        | .46             | .43        | .35       | .70      | .75     | 1.07       | .91       | .50         |              |            |                 | 1.67        | .60        | .52            | .30           | .37         |                 |
| 24. |             | .01        |                 |            |           |          | .02     | .06        | .06       | .13         |              |            |                 | .91         |            | .28            | .30           | .03         | .40             |
| 25. |             | .01        |                 |            |           |          |         |            |           |             |              |            |                 | .02         |            |                |               | .02         |                 |
| 26. |             | .11        | .11             | .08        | .05       | .02      | .07     | .13        | .02       | .05         |              |            |                 |             |            |                |               |             |                 |
| 27. | .05         |            |                 |            | .20       | .03      |         | .02        |           |             |              |            |                 |             | .03        | .29            | .35           | .07         | .14             |
| 28. |             | .03        | .04             |            |           | .04      | .05     | .02        | .10       | .02         |              |            |                 | .30         | .13        | .24            | .30           | .08         | .11             |
| 29. |             | .03        | .07             |            |           |          | .07     | .05        | .05       |             |              |            |                 |             | .01        | .01            | .01           | .05         |                 |
| 30. |             | .02        |                 |            |           |          | .01     |            |           |             |              |            |                 | .02         |            |                |               | .05         |                 |
| 31. |             |            |                 |            |           |          |         |            |           |             |              |            |                 |             |            |                |               | .01         |                 |
|     | 2.39        | 2.51       | 2.29            | 1.09       | 1.73      | 2.44     | 3.24    | 3.45       | 2.93      | 2.70        |              |            | 3.03            | 3.62        | 1.92       | 1.70           | 2.35          | 2.61        | 1.95            |

\* United States weather bureau station.

## PRECIPITATION FOR NOVEMBER, 1891—Continued.

[illegible]



For December, 1891.

*General Remarks.*

The month just closed, has been one of the warmest on record, and is in marked contrast with the corresponding month of 1890. The mean temperature of this December being eleven degrees higher than last December.

Following is a tabulated statement of the mean temperatures for December since the Pennsylvania state service has been in operation :

December, 1887, mean temperature  $31^{\circ}.5$ .

December, 1888, mean temperature  $32^{\circ}.6$ .

December, 1889, mean temperature  $39^{\circ}.3$ .

December, 1890, mean temperature  $27^{\circ}.5$ .

December, 1891, mean temperature  $38^{\circ}.6$ .

It will be noticed that December, 1889 was slightly warmer than in 1891.

The month was almost entirely without the low temperatures that usually occur, and the maximum temperatures were decidedly higher.

Another marked feature of the past month was the almost entire absence of snowfall. The largest total was 3.00 inches, while in December, 1890, 96.00 inches, 65.00 inches, 60.00 inches and 57.00 inches for the month were reported at different stations.

Owing to the continued warm weather the crops were not injured, and they are reported as generally in good condition.

*Temperature.*

The mean temperature for December, 1891, was  $38^{\circ}.6$ , which is over  $8^{\circ}.0$  above the normal, and  $11^{\circ}.1$  above the corresponding month of 1890.

The mean of the daily maxima and minima temperatures  $47^{\circ}.9$  and  $28^{\circ}.9$  give an average daily range of  $19^{\circ}.0$ , and a monthly mean of  $38^{\circ}.4$ .

Highest monthly mean,  $44^{\circ}.0$  at Altoona.

Lowest monthly mean,  $33^{\circ}.6$  at Kane.

Highest temperature recorded during the month,  $68^{\circ}.0$  on the 5th at Meadville.

Lowest temperature, minus  $3^{\circ}.0$  on the 18th at Somerset.

Greatest local monthly range,  $66^{\circ}.0$  at Somerset.

Least local monthly range,  $38^{\circ}$ , at Kane.

Greatest daily range,  $49^{\circ}$  at Ligonier on the 18th.

Least daily range,  $2^{\circ}.2$  at Hulmeville, Westtown and Dyberry on the 25th, at Grampian Hills on the 26th, Erie on the 30th, and Columbus on the 7th.

From January 1, 1891, to December 31, 1891, the excess in temperature at Philadelphia was  $362^{\circ}$ , at Erie  $207^{\circ}$ , and at Pittsburgh  $275^{\circ}$ .

*Barometer.*

The mean pressure for the month, 30.18, is about 12 above the normal. At the United States weather bureau stations the highest observed was 30.69 at Pittsburgh on the 18th, and the lowest 29.55 at Philadelphia on the 16th and at Erie on the 15th.

*Precipitation.*

The average precipitation, 4.09 inches for the month, is an excess of 1.12 inches.

The largest totals in inches were Drifton, 6.53; Girardville, 6.23; McConnellsburg, 5.62, and Quakertown, 5.44.

The least were Blue Knob, 2.00; New Castle, 2.58; Wysox, 2.83, and Altoona, 2.96.

The following are the largest totals of snowfall reported: Blue Knob, 3.50; Kane, 3.00, and Emporium, 2.75 inches.

*Wind and Weather.*

The prevailing wind was from the southwest.

Average number: Rainy days, 10; clear days, 12; fair days, 8; cloudy days, 11.

MONTHLY SUMMARY OF REPORTS by *Voluntary Observers of the Pennsylvania State Weather Service for December, 1891.*

| COUNTY.           | STATION.                         | BAROMETER REDUCED TO SEA LEVEL. |       |          |         | TEMPERATURE. |          |          |         |                  |                  |       |              |           |        |       |    |
|-------------------|----------------------------------|---------------------------------|-------|----------|---------|--------------|----------|----------|---------|------------------|------------------|-------|--------------|-----------|--------|-------|----|
|                   |                                  | Elevation.                      | Mean. | Highest. | Lowest. | MAXIMUM.     |          | MINIMUM. |         | Mean of maximum. | Mean of minimum. | Mean. | DAILY RANGE. |           |        |       |    |
|                   |                                  |                                 |       |          |         | Date.        | Highest. | Date.    | Lowest. |                  |                  |       | Date.        | Greatest. | Least. | Date. |    |
| Allegheny.*       | Pittsburgh.                      | 847                             | 30.19 | 30.69    | 29.64   | 42.1         | 63       | 4        | 16      | 18               | 50.2             | 34    | 16.2         | 29        | 21     | 6     | 25 |
| Berks.*           | Hamburg (28 days).               | 380                             |       |          |         | 38.2         |          |          |         |                  |                  |       |              |           |        |       |    |
| Berks.            | Reading.                         | 280                             |       |          |         | 39.3         |          |          |         |                  |                  |       |              |           |        |       |    |
| Barr.*            | Altoona.                         | 1,761                           |       |          |         | 44           | 60       | 4        | 6       | 18               | 52.4             | 35.6  | 16.8         | 35        | 18     | 4     | 26 |
| Blair.            | Blair.                           | 2,300                           |       |          |         | 34.3         |          |          |         |                  |                  |       |              |           |        |       |    |
| Blair.            | Hollidaysburg.                   | 1,170                           |       |          |         | 38.7         |          |          |         |                  |                  |       |              |           |        |       |    |
| Bradford.         | Wysox.                           | 718                             | 30.16 | 30.68    | 29.63   | 36.6         | 60       | 4        | 8       | 18               | 48.4             | 25    | 23.4         | 38        | 1      | 10    | 24 |
| Bradford.         | Le Roy.                          | 1,400                           |       |          |         | 40.4         | 57       | 4        | 10      | 17               | 44.4             | 26.4  | 18           | 28        | 1      | 6     | 30 |
| Bucks.            | Hulmeville.                      |                                 | 30.16 | 30.62    | 29.49   | 40.4         | 66       | 23       | 11      | 17               | 50.4             | 30.3  | 20.1         | 35        | 8      | 2     |    |
| Bucks. (29 days). | Forks of Nesaminy (Rush Valley). |                                 |       |          |         | 42.2         |          |          |         |                  |                  |       |              |           |        |       |    |
| Bucks.            | Quakertown (24 days).            | 536                             | 30.20 |          |         | 38.2         |          |          |         |                  | 50.9             | 26.6  | 23.3         |           |        |       |    |
| Cambria.*         | Johnstown.                       | 1,184                           | 30.24 | 30.71    | 29.74   | 38.8         | 61       | 15       | 10      | 8                | 49.8             | 27.9  | 21.9         | 40        | 1      | 10    | 25 |
| Cambria.          | Emporium.                        | 1,030                           |       |          |         | 36.7         | 58       | 4        | 8       | 18               | 45.4             | 25.3  | 20.1         | 33        | 10     | 21    | 20 |
| Centre.           | State College.                   | 1,191                           | 30.14 | 30.65    | 29.53   | 37.8         | 58       | 4        | 6       | 18               | 46.6             | 28.6  | 17.4         | 20        | 16     | 7     | 20 |
| Chester.          | West Chester.                    | 435                             |       |          |         | 41.5         | 64       | 23       | 13      | 18               | 50.7             | 32.3  | 18.4         | 28        | 2      | 4     | 25 |
| Chester.          | Conestoga.                       | 580                             |       |          |         | 38.9         | 65       | 23       | 13      | 18               | 52.7             | 27.4  | 25.3         | 16        | 10     | 6     | 25 |
| Chester.          | Kennett Square.                  | 275                             | 30.20 | 30.62    | 29.56   | 37.5         | 66       | 23       | 13      | 18               | 51.7             | 31.3  | 20.4         | 30        | 2      | 3     | 25 |
| Chester.*         | Phoenixville.                    | 435                             | 30.20 |          |         | 41.3         | 65       | 4        | 16      | 17               |                  |       |              |           |        |       | 25 |
| Chester.          | Westtown.                        | 435                             | 30.13 | 30.66    | 29.66   | 40.5         | 65       | 4        | 16      | 17               |                  |       |              |           |        |       | 25 |
| Chester.          | Grampian Hills.                  | 1,450                           |       |          |         | 34.8         | 56       | 4        | 16      | 17               |                  |       |              |           |        |       | 25 |
| Clinton.          | Lock Haven.                      | 1,500                           |       |          |         | 37.4         | 64       | 10       | 9       | 18               | 43.0             | 27.8  | 18.2         | 34        | 10     | 6     | 25 |
| Crawford.         | Mendville (30 days)              |                                 |       |          |         | 39.6         | 62       | 5        | 9       | 18               | 45.5             | 28.9  | 21.4         | 37        | 19     | 7     | 31 |
| Crawford.         | Saegertown.                      |                                 |       |          |         | 35.8         | 57       | 4        | 9       | 18               | 49.9             | 25.6  | 18.3         | 34        | 19     | 5     | 15 |
| Cumberland.       | Harrisburg.                      | 480                             |       |          |         | 38.6         | 65       | 10       | 13      | 18               | 44.8             | 28.2  | 21.6         | 42        | 10     | 4     | 25 |
| Dauphin.          | Swarthmore College.              | 361                             | 30.20 | 30.66    | 29.62   | 39.8         | 63       | 4        | 13      | 18               | 47.4             | 32.3  | 15.1         | 29        | 10     | 3     | 15 |
| Delaware.*        | Erie.*                           | 190                             | 30.17 | 30.58    | 29.66   | 41.2         | 66       | 23       | 14      | 18               | 50.2             | 32.6  | 17.6         | 30        | 8      | 4     | 35 |
| Erie.*            | Uniontown.                       | 681                             | 30.10 | 30.61    | 29.55   | 38           | 60       | 15       | 17      | 17               | 44.4             | 31.2  | 13.2         | 24        | 15     | 2     | 30 |
| Fayette.          | McConnellsburg.                  | 1,000                           |       |          |         | 41.3         |          |          |         |                  | 50.4             | 32.2  | 18.2         |           |        |       |    |
| Fulton.           | Huntingdon.                      | 875                             |       |          |         | 39.8         | 64       | 10       | 12      | 18               | 51.1             | 28.4  | 22.2         | 38        | 19     | 9     | 15 |
| Huntingdon.*      | Lebanon.                         | 650                             |       |          |         | 38.7         | 61       | 6        | 9       | 18               | 49.8             | 27.6  | 22.2         | 35        | 12     | 12    | 25 |
| Lancaster.        | New Castle.                      | 413                             |       |          |         | 41.8         |          |          |         |                  | 48               | 29.1  | 19.7         | 35        | 12     | 7     | 35 |
| Lawrence.         | Lebanon.                         | 427                             | 30.19 | 30.64    | 29.52   | 40.3         | 58       | 16       | 12      | 18               | 48               | 27    | 19.7         | 35        | 10     | 6     | 25 |
| Lehigh.           | Coopersburg.                     | 520                             |       |          |         | 38.7         | 62       | 23       | 11      | 18               | 51.1             | 30.8  | 20.9         | 32        | 10     | 6     | 25 |
| Luzerne.*         | Driffton (27 days).              | 1,655                           | 30.24 | 30.63    | 29.67   | 45.6         | 57       | 1        | 4       | 17               | 44.1             | 27.2  | 16.9         | 38        | 18     | 3     | 25 |



## MONTHLY SUMMARY OF REPORTS—Continued.

| COUNTY.      | STATION.                                     | Relative humidity. | PRECIPITATION. |                               |       |                          | NUMBER OF DAYS |        |       |         | WIND.   |         |         |
|--------------|----------------------------------------------|--------------------|----------------|-------------------------------|-------|--------------------------|----------------|--------|-------|---------|---------|---------|---------|
|              |                                              |                    | Dew point.     | Total, including melted snow. | Snow. | DEPTH OF SNOW ON GROUND. |                | Clear. | Fair. | Cloudy. | 7 a. m. | 2 p. m. | 9 p. m. |
|              |                                              |                    |                |                               |       | 16th.                    | 31st.          |        |       |         |         |         |         |
| Allegheny.   | Pittsburgh.                                  | 61.3               | 27.8           | 3.05                          | .     | .                        | .              | 12     | 10    | 8       | W       | .       | S       |
| Berks.*      | Hamburg (28 days).                           | .                  | .              | 4.06                          | .     | .                        | .              | .      | .     | .       | .       | .       | .       |
| Berks.       | Reading.                                     | .                  | 31             | 3.61                          | .     | .                        | .              | 10     | 7     | 12      | NW      | NW      | NW      |
| Blair.*      | Altoona.                                     | 60.6               | 31             | 2.96                          | 3.50  | T                        | .              | 8      | 7     | 10      | W       | W       | W       |
| Blair.       | Blue Knob.                                   | .                  | 29.5           | 3.89                          | .     | .                        | .              | 9      | 15    | 10      | W       | W       | W       |
| Bradford.    | Holidaysburg.                                | 72.6               | 29             | 2.83                          | T     | .                        | .              | 9      | 13    | 15      | SE      | SE      | SE      |
| Bradford.    | Wysox.                                       | 76                 | 29             | 4.34                          | T     | .                        | .              | 12     | 4     | 15      | SW      | SW      | SW      |
| Bucks.       | Le Roy.                                      | .                  | 4.01           | 4.01                          | .     | .                        | .              | 14     | 9     | 11      | W       | W       | W       |
| Bucks.       | Hulmeville.                                  | .                  | 31.2           | 5.88                          | T     | .                        | .              | 13     | 9     | 8       | SW      | SW      | SW      |
| Bucks.       | Forks of Neshaminy (Rush Valley), (29 days). | 77.7               | 31.2           | 5.84                          | T     | .                        | .              | 12     | 10    | 9       | SW      | SW      | SW      |
| Cambridg.    | Quakertown (24 days).                        | .                  | 31             | 3.94                          | 2.75  | T                        | .              | 11     | 11    | 12      | W       | W       | W       |
| Centre.      | Emertown.                                    | 80.2               | 31             | 4.08                          | T     | .                        | .              | 11     | 11    | 7       | W       | W       | W       |
| Centre.      | State College.                               | 76.3               | 30.3           | 4                             | .     | .                        | .              | 12     | 16    | 4       | W       | W       | NW      |
| Chester.     | West Chester.                                | 66.3               | 31.5           | 4                             | .     | .                        | .              | 9      | 13    | 8       | W       | W       | NW      |
| Chester.     | Coatesville.                                 | .                  | 38.5           | .                             | .     | .                        | .              | 8      | 14    | 7       | W       | W       | NW      |
| Chester.*    | Kennett Square.                              | .                  | 28.3           | 3.82                          | .     | .                        | .              | 11     | 12    | 2       | NW      | NW      | NW      |
| Chester.     | Phenixville.                                 | 76.7               | 28.3           | 3.82                          | .     | .                        | .              | 14     | 7     | 10      | W       | W       | W       |
| Chester.     | Westtown.                                    | .                  | 5.15           | 5.15                          | 2.50  | .                        | .              | 10     | 14    | 4       | SW      | SW      | W       |
| Cleatfield.  | Gramplan Hills.                              | .                  | 5.15           | 5.15                          | 2.50  | .                        | .              | 10     | 13    | 6       | SW      | SW      | W       |
| Clinton.     | Look Haven.                                  | .                  | 5.15           | 5.15                          | 2.50  | .                        | .              | 10     | 13    | 6       | SW      | SW      | W       |
| Crawford.    | Meadville (30 days).                         | 50                 | 30             | 4.09                          | .     | .                        | .              | 15     | 9     | 12      | S       | S       | S       |
| Crawford.    | Saegertown.                                  | 81                 | 30             | 3.15                          | T     | .                        | .              | 10     | 10    | 16      | W       | W       | N       |
| Cumberland.  | Carlisle.                                    | 83                 | 30             | 3.15                          | .     | .                        | .              | 10     | 11    | 10      | NW      | NW      | NW      |
| Dauphin.*    | Harrisburg.                                  | 68.2               | 27.6           | 3.71                          | .     | .                        | .              | 7      | 12    | 7       | SW      | SW      | SW      |
| Delaware.    | Baltimore College.                           | 81                 | 33             | 3.36                          | .     | .                        | .              | 17     | 10    | 9       | SW      | SW      | SW      |
| Delaware.    | Erie.                                        | 72                 | 29             | 3.27                          | .     | .                        | .              | 7      | 15    | 7       | SW      | SW      | SW      |
| Fayette.     | Uniontown.                                   | 67.1               | 28.5           | 4.22                          | .     | .                        | .              | 11     | 12    | 9       | NW      | NW      | W       |
| Fulton.      | McConnellsburg.                              | .                  | .              | 4.18                          | .     | .                        | .              | 7      | 12    | 4       | SE      | SE      | SE      |
| Huntingdon.* | Huntingdon.                                  | .                  | .              | 0.5                           | T     | .                        | .              | 10     | 13    | 10      | SW      | SW      | SW      |
| Lancaster.   | Lancaster (16 days).                         | 74.3               | 31.5           | 4.84                          | .     | .                        | .              | 9      | 16    | 6       | NE      | NE      | NE      |
| Lawrence.    | New Castle.                                  | .                  | 25.8           | 2.58                          | .     | .                        | .              | 8      | 12    | 12      | SE      | SE      | SE      |
| Lebanon.     | Lebanon.                                     | 72.9               | 29             | 4.88                          | 1     | .                        | .              | 10     | 13    | 8       | SW      | SW      | SW      |
| Lehigh.      | Coopersburg.                                 | .                  | 29             | 6.53                          | .     | .                        | .              | 10     | 16    | 9       | SW      | SW      | NE      |
| Luzerne.*    | Driffton (27 days).                          | .                  | 29             | 6.53                          | .     | .                        | .              | 12     | 4     | 11      | SW      | SW      | NE      |





## PRECIPITATION FOR DECEMBER, 1891.

| DATE | Altoona | Blue Knob. | Brower's Look. | Carlisle. | Coatesville. | Columbus. | Coopersburg. | Boylestown. | Britton. | Dyersburg. | Emporium. | Porte.* | Forks of Neshaminy. | Frederick. | Granthville. | Grappian Hills. | Hamburg. | Barrisburg.* | Hollidaysburg. | Tonesdale. | Hatfieldville. |
|------|---------|------------|----------------|-----------|--------------|-----------|--------------|-------------|----------|------------|-----------|---------|---------------------|------------|--------------|-----------------|----------|--------------|----------------|------------|----------------|
| 1.   |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 2.   |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 3.   |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 4.   | .90     | .15        | .98            | .83       | .59          | .80       | 1.49         | .94         | 2.13     | 1.33       | 1.64      | .50     | .95                 | 1.32       | 1.92         | 1.16            | .97      | .81          | 1.28           | 1.10       | .78            |
| 5.   | .12     |            |                | .04       |              | .13       |              |             |          |            |           | .01     |                     |            |              |                 |          |              |                |            |                |
| 6.   |         |            |                |           |              |           |              |             |          |            |           | .08     |                     |            |              |                 |          |              |                |            |                |
| 7.   | .10     | .12        | .38            | .50       | .81          | .01       | .30          | .77         | .28      | .15        | .12       | .05     | .75                 | .71        | .18          | .11             | .47      | .32          | .18            | .06        | .35            |
| 8.   |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 9.   |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 10.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 11.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 12.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 13.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 14.  | .18     | .02        | .14            | .01       |              | .15       |              | .05         | .01      | .14        | .00       | .18     | .04                 | .05        | .14          | .88             | .01      | .06          | .52            | .17        | .20            |
| 15.  | .32     |            | .14            |           | .14          | .63       | .08          |             | .15      | .30        | .72       | .25     | .15                 | .17        | .26          | .04             | .33      | .02          |                | .08        |                |
| 16.  | T       | .10        |                |           |              |           |              |             |          |            |           | .02     |                     |            |              |                 |          | T            |                |            |                |
| 17.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 18.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 19.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 20.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 21.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 22.  |         | .01        |                |           |              | .23       | .06          |             |          | .15        | .11       | .18     |                     |            |              |                 | .01      | .03          | .14            |            |                |
| 23.  | .20     | .08        | .27            | .68       | .38          | 1.05      | .97          | .45         | .95      | .55        | .58       | .86     | .46                 | .81        | .30          | .18             | .01      | .03          | .14            |            |                |
| 24.  | .14     | .17        | 1.02           | .38       | 1.15         | .35       | .70          | 1.10        | .32      | .40        | .36       | .32     | 1.33                | .86        | 1.03         | .82             | .66      | .70          | .40            | .76        |                |
| 25.  | .03     |            |                | .04       | .01          |           |              |             |          | .10        | .03       | .02     |                     |            | .13          | .12             | .44      | .02          | .34            | .24        | .55            |
| 26.  | .68     | .62        | .22            | .68       | .29          | .32       | .51          | .39         | .67      | .32        | .51       | .13     | .30                 | .38        | .82          | .63             | .89      | .75          | .56            | .45        | .28            |
| 27.  | T       | .15        |                | .03       |              | .01       |              |             |          |            | .06       | .08     |                     |            |              |                 |          |              |                |            |                |
| 28.  |         |            |                | .03       |              | .38       | .32          | .04         | 2.02     | .40        | .23       | .24     | .90                 | .09        | 1.25         | .56             | .45      | .38          | .47            |            | .65            |
| 29.  | .42     | .38        | .31            | .24       | .21          | .20       | .20          | .57         |          | .33        |           | .01     | .01                 | .23        |              |                 | .20      | .02          |                |            |                |
| 30.  |         |            |                |           |              |           |              |             |          |            |           |         |                     |            |              |                 |          |              |                |            |                |
| 31.  |         |            |                |           |              |           |              |             |          |            |           | .01     |                     |            |              |                 |          |              |                |            |                |
|      | 2.86    | 2.00       | 3.55           | 3.66      | 3.85         | 4.56      | 4.83         | 4.29        | 6.53     | 4.17       | 4.96      | 3.27    | 4.88                | 4.62       | 6.23         | 5.15            | 4.06     | 3.76         | 3.89           | 3.53       | 4.01           |

\* United States weather bureau station

T indicates trace of precipitation.

## PRECIPITATION FOR DECEMBER, 1891—Continued

|    | Huntingdon. | Johnstown. | Kane. | Kennett Square. | Lancaster. | Lansdale. | Lebanon. | Le Roy. | Lewistown. | Ligonier. | Lock Haven. | E. Mauch Chunk. | Meadville. | McConnellsburg. | New Castle. | Ottsville. | Philadelphia.* | Philadelphia. | Phoenixville. | Pittsburgh.* | Point Pleasant. |
|----|-------------|------------|-------|-----------------|------------|-----------|----------|---------|------------|-----------|-------------|-----------------|------------|-----------------|-------------|------------|----------------|---------------|---------------|--------------|-----------------|
| 1  |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 2  |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 3  |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 4  |             | 1.51       | 1.06  | .97             |            | .93       | 1.18     | 1.42    | 1.49       | 1.20      | 1.48        |                 |            | 1.55            | .62         | 1.35       | .42            | .64           | .46           | 1.01         | 1.05            |
| 5  |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 6  |             |            | T     |                 |            |           | .41      | .02     | .15        | .25       |             |                 |            |                 | .18         | .60        | .73            | .75           | .61           | .63          | .88             |
| 7  |             | .11        | .13   | .70             |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 8  |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 9  |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 10 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 11 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 12 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 13 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 14 |             |            | T     |                 |            |           | .01      | .02     | .03        | .05       | .33         |                 |            |                 |             |            |                |               |               | .07          |                 |
| 15 |             | .21        | .45   |                 |            |           | .05      | .38     | .07        | .40       | .13         |                 |            | .20             | .66         |            | .01            | .10           | .10           | .06          |                 |
| 16 |             | .13        | .35   | .16             |            |           | .05      |         |            |           |             |                 |            |                 |             |            | .06            | .10           |               | .37          |                 |
| 17 |             |            | .02   |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               | .02          |                 |
| 18 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 19 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 20 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 21 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 22 |             | .02        | .17   | .46             |            |           | .01      | T       |            | .20       | .20         |                 |            |                 |             |            | T              | .08           | .40           | .52          | .78             |
| 23 |             | .33        | .33   | .38             |            |           | .56      | .50     |            | .84       | .27         |                 |            | 1.72            | .64         | 1.05       | .04            | 1.71          | 1.13          | .02          | 1.04            |
| 24 |             | .30        | .13   | .25             |            |           | 1.70     | .57     | .32        | .15       | .53         |                 |            | .80             | .01         | 1.22       | .01            | .65           | .07           | .20          | .48             |
| 25 |             | .01        | .02   | .43             |            |           | .03      |         |            | .08       | .08         |                 |            |                 |             |            | .02            | .32           | .30           | .21          | T               |
| 26 |             | .72        | .57   | .18             |            |           | .83      | .33     | 1.43       | .55       | .66         |                 |            | .57             | .23         | .32        | .01            | .01           | .01           | .02          | .02             |
| 27 |             |            | T     |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 28 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
| 29 |             | .25        | .58   | .27             |            |           | .71      | 1.35    | .80        | .75       | .74         |                 |            | .61             | .28         | .20        | .30            | .31           | .17           | .40          | .16             |
| 30 |             | .30        | .02   | .20             |            |           | .01      |         | .20        |           |             |                 |            | .07             |             | .47        | .35            | .28           | .18           | T            | .45             |
| 31 |             |            |       |                 |            |           |          |         |            |           |             |                 |            |                 |             |            |                |               |               |              |                 |
|    | 4.18        | 3.84       | 3.66  | 4.09            | 3.41       | 4.34      | 4.31     | 4.17    | 4.41       | 4.44      |             |                 |            | 5.62            | 2.62        | 5.37       | 3.78           | 4.23          | 3.82          | 3.05         | 4.86            |

T Indicates trace of precipitation.

\* United States weather bureau station.

PRECIPITATION FOR DECEMBER, 1891—*Continued.*

|     | Pottstown. | Quakertown. | Reading. | Sacrestown. | Neisholizville. | Bellinsgrove. | Smethport. | Smith's Corner. | Somerset. | South Eaton. | State College. | Swarthmore. | Uniontown. | Wellsboro. | West Chester. | Westtown. | Wilkes-Barre. | Williamsport. | Wysox. | York. |
|-----|------------|-------------|----------|-------------|-----------------|---------------|------------|-----------------|-----------|--------------|----------------|-------------|------------|------------|---------------|-----------|---------------|---------------|--------|-------|
| 1.  |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 2.  |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 3.  |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 4.  | .80        | 1.48        | .68      | .72         | 1.23            | 1.30          | 1.00       | 1.75            | .94       | 1.50         | .88            | 1.27        | 2.35       | .79        | .04           | .70       |               |               | .30    | 1.55  |
| 5.  |            |             |          | .12         |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 6.  |            |             |          | .08         | .57             | .11           | .80        | .35             | .07       | .06          | .66            | .33         |            |            |               | .70       |               |               |        | .36   |
| 7.  | .65        | .71         | .37      |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 8.  |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 9.  |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 10. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 11. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 12. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 13. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 14. |            |             |          | .65         |                 | .65           | .02        | .30             | .09       | .18          |                |             | .18        | .16        | .03           | .05       |               |               | .06    |       |
| 15. |            |             | .01      | .48         | .14             |               | .14        | .10             | .65       | .22          |                |             | .28        | .40        | .18           |           |               |               | .21    | .02   |
| 16. | .20        | .15         | .15      | .23         | .14             |               |            | .11             |           | T            |                |             |            |            |               |           |               |               | .03    |       |
| 17. |            |             | .31      | .40         |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 18. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 19. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 20. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 21. |            |             |          |             |                 | .23           |            | .15             | .03       | .15          |                |             | .05        | .02        |               | .07       |               |               | .19    | .04   |
| 22. |            | .22         | .30      | .21         | 1.21            | .25           | .85        | .80             | .52       | .42          | .05            | .36         | .78        | .23        |               |           |               |               | .24    | .25   |
| 23. | .80        | 1.12        | .58      | .92         | .71             | .22           | 1.02       | .45             | .13       | .27          | 1.60           | .47         | .10        | 1.36       | .25           |           |               |               | .03    | .58   |
| 24. | .82        | .94         | .65      | .26         | .07             | .07           | .01        | .10             | .01       | .10          | .22            | .59         | .08        | .26        | .02           |           |               |               | .05    |       |
| 25. |            |             | .75      | .01         | .15             | .12           | .45        | .34             | .31       | .26          |                |             |            |            |               |           |               |               | .11    | .46   |
| 26. | .43        | .52         | .57      | .01         |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 27. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 28. |            |             |          | .38         | .23             | 1.22          | .18        | .15             |           | .49          | .62            | .20         | .69        | .12        | .33           | .43       |               |               | 1.04   | .90   |
| 29. | .38        | .45         | .13      |             |                 |               | .24        |                 | .25       | .01          | .25            |             |            |            | .22           |           |               |               |        | .01   |
| 30. |            |             | .11      | .01         | .11             |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
| 31. |            |             |          |             |                 |               |            |                 |           |              |                |             |            |            |               |           |               |               |        |       |
|     | 4.08       | 5.54        | 3.61     | 4.09        | 4.85            | 3.97          | 4.71       | 4.60            | 2.88      | 4.08         | 3.36           | 4.22        | 4.01       | 4.00       | 3.24          |           |               |               | 2.83   | 4.20  |

\* United States weather bureau station.

T Indicates trace of precipitation.

## APPENDIX E.

## REPORTS OF CONFERENCES AND CONVENTIONS.

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1. Proceedings of the National Conference of State Boards of Health, 1891.
  2. Report of the Secretary as Delegate to the Meeting of the Public Health Association, 1890.
  3. Report of the Secretary as Secretary of the Section on State Medicine of the American Medical Association, 1891.
  4. Proceedings of the Fifth State Sanitary Convention, May, 1891.
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1. PROCEEDINGS OF THE NATIONAL CONFERENCE OF STATE  
BOARDS OF HEALTH, WASHINGTON, D. C., MAY 2 AND 4,  
1891.

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States represented.

Quarantine requisites.

Sources of our yellow fever epidemics. By J. Cochran, M. D.

Principles of disinfection

Quarantine outfits.

Discussion.

Should state boards control the sanitary arrangements of school buildings?

How consumption is spread and measures for its prevention. By P. H. Bryce,

M. D.

History.

Prevalence.

Predisposing causes.

Discussion.

Would the appointment of medical health officers for counties, and paid for devoting their time to public health work, in place of township officers be advantageous and practicable? By C. A. Lindsley, M. D.

The advantages of organization of rivers conservancy commissions, composed of state and municipal health boards, for the protection of streams against deforesting and pollution at their sources and along their courses. By Dr Salomon.

Discussion.

What change, if any, should be made in the present plan for providing a programme for meetings of the conference.

Officers elected for 1892.

What recent developments have been made in laboratory work of value to health boards? By V. A. Vaughan, M. D.

Report on consumption.



The seventh annual meeting of the National Conference of State Boards of Health was held at the Ebbitt House, Washington, D. C., May 2 and 4, 1891.

The meeting was called to order at 10 a. m., Saturday, May 2, by Dr. J. N. McCormack, President.

The following states were represented:

Alabama—Dr. Jerome Cochran.

Connecticut—Dr. C. A. Lindsley.

Illinois—Dr. John H. Rauch.

Indiana—Dr. C. N. Metcalf.

Dr S. S. Boots.

Iowa—Dr. J. C. Shrader.

Kentucky—Dr. J. N. McCormack,

Dr. George Beeler.

Louisiana—Dr. S. R. Olliphant,

Dr. L. F. Salomon.

Maryland—Dr. C. W. Chancellor.

Michigan—Dr. John Avery,

Dr. Victor C. Vaughan.

Minnesota—Dr. P. H. Millard.

Missouri—Dr. George Homan

New Hampshire—Dr. Irving A. Watson.

New York—Dr. Lewis Balch,

Dr. O. Donohue.

Ohio—Dr. C. O. Probst.

Pennsylvania—Dr. Benjamin Lee.

Rhode Island—Dr. Albert G. Sprague.

South Carolina—Dr. H. D. Frazer.

Tennessee—Dr. J. Berrien Lindsley

Vermont—Dr. J. H. Hamilton.

West Virginia—Dr. N. D. Baker.

Wisconsin—Dr. J. T. Reeve

Province of Ontario—Dr. P. H. Bryce.

The PRESIDENT: Gentlemen of the Conference, I have the pleasure of introducing to you Mr. Douglass, president of the board of commissioners of the District of Columbia.

Mr. Douglass made a pleasant address of welcome to the delegates, in which he referred to boards of health as boards of happiness, for their efforts are to promote the health of the community in order that every man may live out the full measure.

Washington, said he, is rapidly getting to be quite a scientific city by attrition and contact with the many scientific bodies that are making it their custom to meet in conventions here. This city has a new health ordinance compelling the placarding of houses where certain diseases are known to be.

At first this had almost caused a riot, but more recently a man had complained bitterly because his house was not placarded. This shows the progress of sanitary intelligence here. Feeling sure that their conference would result in the greatest good to the society and to the country at large Mr. Douglass again bade them welcome to the city.

The PRESIDENT. I have heard with pleasure the kind things Mr. Douglass has said. This is one of a number of meetings we have held in this city. We represent the official state organizations in our respective states. The growth of state board of health work has been very rapid. As you know, the first board was organized in 1869; now there are thirty-two state boards of health in the union, and measures are pending looking to the establishment of similar organizations in the other states.

The SECRETARY. I have an explanation and apology to make in regard to announcing the local committee of arrangements, to whom we are very much indebted. Dr. Townshend, the district health officer, very kindly consented to arrange for this committee, but on account of the doctor's illness, the matter was delayed until after our programme was issued. The local committee are Dr. Philip S. Wales, Dr. C. H. Demerest, Dr. Poole and J. C. McGinn, the deputy health officer.

The PRESIDENT. Dr. Brice, of Toronto, telegraphs asking me to announce that it is impossible for him to get here until this afternoon, and requesting the postponement of the discussion of the first and second questions in which he is interested.

The first question for discussion will be the one proposed by the State Board of Health of Louisiana:

1. What are the requisites for a thorough system of quarantine and maritime sanitation in the light of present scientific attainment?

2. What are the best methods for the self-protection of individual states from the introduction of pestilence through states which have no adequate quarantine?

And in connection with this, the question proposed by the State Board of Health of Alabama:

1. Given a vessel with cargo from Central or South America, or the West India Islands, can such vessel and cargo be disinfected without discharging the cargo?

2. Can such cargo be disinfected thoroughly, and without damage, after it has been discharged?

The discussion of these questions will be opened by Dr. Jerome Cochran of Alabama.

### Quarantine Reports.

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By DR. JEROME COCHRAN, *State Health Officer of Alabama.*

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I have undertaken to open the discussion on one of the questions submitted by the Louisiana State Board of Health, namely: What are the requisites for a thorough system of quarantine and maritime sanitation in the light of present scientific attainment? In accordance with the limitations of my own personal and experimental knowledge, I shall confine the discussion to a consideration of the best means for the protection of our gulf ports from invasion by yellow fever by way of the sea.

#### THE SOURCES OF OUR YELLOW FEVER EPIDEMICS

Yellow fever epidemics have prevailed within the territorial limits of the United States since the Columbian discovery of America, in ninety-three different years. In eighty-one of these years we have had some evidence as to the sources whence it was derived, namely: From the West Indies, seventy-five (75) times; from Mexico, four (4) times; from Demerara, twice (2); from Honduras, once (1), and from Rio de Janeiro, once (1).

From these statements it follows that the great sources of danger to us are the West India Islands; and amongst these islands, the single island of Cuba, and the single city of Havana, have furnished us with the immense majority of our epidemics. I could give you the reasons why Havana is so exceptionally dangerous, but it would take too much time to undertake to do so on the present occasion.

The yellow fever which is brought us from Havana and other foreign ports is necessarily brought to us in water crafts of various kinds, all of which we may speak of for convenience as ships, and as an incidental consequence of our foreign commerce

If we could prevent the infection of ships at the foreign port, say for example, at Havana, that would be the best possible solution of the problem of protection. We cannot always do this with certainty; but we can do it even now to a considerable extent; and it is to be hoped that we will be able to accomplish more in this direction in the near future. It is certainly true, and I desire to call very emphatic attention to the statement, that the immense majority of the ships coming to us from Havana during the season of the year when yellow fever is most prevalent there, are entirely free from infection, and hence, also, entirely free from danger. While this is a fact of great practical importance, it is one that seems to have attracted very little discussion, and it is therefore difficult to indicate what proportion of the whole number this majority actually is. From such data as I have been able myself to collect, I am well satisfied that of ships coming into the Gulf

of Mexico from the West India ports in epidemic seasons, not more than one in twenty at the most is really infected, while in non-epidemic seasons the proportion is less than one to the hundred. I suppose that to many who have had much experience in quarantine work, this statement will seem altogether incredible. It is, nevertheless, beyond all question, substantially true; and it is very easy to see that its thoroughgoing recognition will materially influence the current practice of quarantine.

This comparative immunity of ships from Havana from the infection of yellow fever has been obtained for many years, and in the absence of any special effort to secure it. Of late years, however, we have had agents in Havana, and some other ports, whose official duty it has been to inspect and certify to the sanitary condition and sanitary history of ships coming to this country. I regard this system of sanitary supervision of ships at the port of departure as extremely important, and as admitting of large development. Indeed, I do not think that it is altogether visionary to forecast the time when the principal quarantine station for the protection of our gulf ports will be not at New Orleans or Mobile, but in the harbor of Havana.

As we have seen the chances are many to one that any designated ship in the harbor of Havana will escape infection anyhow, without any special care being taken to that end. But it is possible to take a great deal of care to secure this immunity from infection, and with very great probability that such care will be rewarded with a very large measure of success.

The plan, in this regard, pursued for several years by the Plant line of steamers, running between Havana and Pampa, may be taken as a sample of this sort of work. These steamers are of iron, they have no bilges, and it is easy to keep them scrupulously clean. They go into the harbor of Havana after sun up in the morning, and leave it before sunset in the evening. They do not lie along side of the wharf, but tie up to a buoy out in the bay. Only a single acclimated officer is allowed to go ashore, and only into the business part of the city, where yellow fever is not apt to be found. And no suspicious passengers or freight are allowed to be shipped.

I do not undertake to say that these precautions guarantee complete immunity against infection. I know of no precautions of which that can be said. But I believe such precautions are of very great practical value, and more likely to keep a ship free from infection than the usual treatment at our quarantine stations is to make an infected ship safe again.

#### PRINCIPLES OF DISINFECTION.

Disinfectants, for the purposes of this argument, may be briefly defined as agents which destroy, or render innocuous, the zymotic poisons which generate epidemic diseases.



Or, inasmuch as these zymotic poisons are universally held to be associated with the action of living germs, disinfectants, from another point of view, are such agents as destroy the vitality of disease germs.

It is extremely probable that the real toxic agent in the production of yellow fever is either a ptomaine or a toxalbumin. But it is also extremely probable that human creatures very rarely receive this ptomaine or toxalbumin in sufficient doses to produce an outbreak of the fever, except when it is generated within the system itself by the action of the living germ on some of the tissues or fluids of the body. At any rate, the practice of disinfection is based on the assumption that any agent which will kill the germs which generate the disease poisons will prevent the generation of the disease itself. Hence we may say, very briefly, that disinfectants are germicides

The principal agents of disinfection are. (1) extreme cold; (2) extreme heat; (3) various chemical reagents; (4) cleanliness and ventilation.

The influence of heat and cold upon living creatures, and especially upon microscopic organisms and disease germs, is not at all uniform. Fritsch has shown that certain bacteria in the micrococcus stage retain their vitality after congelation with carbon dioxide, that is to say, at a temperature of 70° below the zero of Fahrenheit's scale, or 102° below the freezing point of water. On the other hand, Dallinger and Drysdale have shown that the germs of certain monads are able to survive a temperature of 300° above Fahrenheit's zero, or 88° above the boiling point of water. In the meantime, fully developed bacteria and fully developed monads are destroyed, as a rule, at a temperature far below the boiling of water, namely, at 140° Fahrenheit.

Of the morbid poisons which generate human pestilences very few have been subjected to direct experimental observation in regard to their capacity to withstand elevations and depressions of temperature; but it is generally accepted as well established that the heat of boiling water is sufficient to destroy the malignant energy of most of the septic germs generated in the human body, such as the poisons of pyæmia, septicæmia, gonorrhœa, syphilis, etc. The contagium of vaccina and the contagium of small-pox are also destroyed at the temperature of boiling water, and this temperature seems to be destructive of the germs of cholera and of typhoid fever. The limits of the resistance of the zymotic poisons to cold have not been much studied, and our knowledge in this direction is still very defective. It is known, however, that vaccina and small-pox survive very great reductions of temperature. Small-pox, indeed, seems to be specially a disease of cold climates and of cold seasons of the year; and is hardly able to maintain itself at all against the protracted summers of our gulf ports. On the other hand, yellow fever is notoriously a disease of warm climates and warm seasons of the year; and the most dreadful epidemics are promptly checked by the advent of frost and winter weather. In the face of this broad fact,



which is sustained by the unanimous testimony of many hundreds of epidemics, it is hardly possible not to believe that the yellow fever poison, or the yellow fever germ, can be destroyed by cold; and if it can be destroyed by the natural cold of very mild winters, it would seem to follow that it can be destroyed, also, by cold artificially produced. The cases, so much discussed, of the Susquehanna and the Plymouth, have thrown some shadows of doubt across the minds of many sanitarians as to the soundness and universality of this conclusion. It seems to me, however, that it is more reasonable to believe that there is some undiscovered fallacy in these cases, than it is to believe that the uniform experience of centuries has in this matter led the whole world astray.

While the yellow fever poison is thus sensitive to cold and intolerant of frost, and while it flourishes most in tropical countries and in summer weather, experience warrants the statement that very high temperatures are just as fatal to it as very low ones. It is very safe to say that it is not able to withstand either wet heat or dry heat at 250° Fahrenheit; and the heat of boiling water, 212°, is probably quite sufficient for its destruction.

The list of chemical disinfectants is quite a long one, but for quarantine purposes it is only necessary to mention two of them, namely, sulphur dioxide and mercury bichloride.

Sulphur fumigation is one of the most ancient methods of disinfection. It was employed by the much planning divine Ulysses, a thousand years before the beginning of our Christian era, to purify the hall of his palace, at Ithaca, which had been made foul by the carcasses of the slain suitors of the prudent Penelope. The disinfecting power of sulphur fumes has been called in question of late years, but the range and limits of its application are now, thanks to the labors of the committee on disinfectants of the American Public Health Association, quite accurately defined. Mixed with atmospheric air to the extent of one or two volumes per centum it destroys the vitality of vaccine virus. I think there can be no doubt of its efficacy against the poisons of measles, small-pox and scarlet fever; but I would like to use it in atmospheric mixtures of much greater strength than one or two per centum—say from five to fifteen volumes per centum. In brief, it is probably fatal, when properly used against all non-spore-bearing bacilli, while it cannot be depended upon for the destruction of the spores of the pathogenic bacilli, such as those of anthrax and malignant oedema. The presumption is that the germ of yellow fever does not produce spores, and that the sulphur dioxide is competent to effect its destruction. The sulphur strength of the atmospheric admixture, and the length of exposure necessary to this end we do not know; and in the absence of such knowledge prudence dictates that the sulphur dioxide should be used in abundant quantities, and that the exposure should be protracted.

Of mercury bichloride I need say very little. Its germicidal power is very energetic, except in the presence of albumen, and its use is not attended with any special difficulty.

The importance of cleanliness and ventilation is so generally recognized that I need do no more than to mention them.

#### QUARANTINE OUTFITS.

In order to determine what sort of a quarantine establishment is needed for the protection of any of our gulf ports it is necessary that we should know approximately a good deal about the commerce of the port in question; such details, for example, as these that follow:

(1) The number of vessels coming into the port during the quarantine season from ports infected with yellow fever and especially from Cuban ports so infected.

(2) The number of such vessels constructed of wood, and the number constructed of iron, and whether sailers or steamers.

(3) How many come with cargoes, and the nature of such cargoes.

(4) How many come in ballast, and the nature of such ballast, whether rock ballast, or sand ballast, or water ballast, or ballast of some other sort.

(5) How many of the ships bring passengers; and how many passengers, and what sort of passengers; whether acclimated or unacclimated, and whether cabin or steerage passengers.

The sort of information here indicated can be always easily obtained; and it is easy to see that the quarantine requirements of a port in which the arrivals of ships during the quarantine season amount to several hundred would need to be projected on a very different scale from the quarantine requirements of a port in which the arrivals number only a few dozen. Wooden ships, under sail, in ballast, without cargoes, with acclimated crews, and without passengers, such as frequent so many of our gulf ports to take away lumber and naval stores, require very different treatment from iron steamers, with valuable cargoes, and numerous unacclimated passengers.

From another point of view, ships may be divided for quarantine purposes into those coming from infected ports, indeed, but with clean bills of health and no history of infection, and in regard to which the presumption is that they are not dangerous; and those without clean bills of health, or with a history of epidemic disease during the voyage, or which for some reason are vehemently suspected of infection; and these two classes of ships require very different treatment.

In regard to ships of the first class there is twenty, thirty, forty to one, that they are free from danger. Nevertheless it is considered to be expedient to disinfect them with more or less care, with the hope of providing against all contingencies and of rendering safe the very small percentage that in spite of appearances may, perchance, be the carriers

of infection. The large majority of our quarantine stations are intended to deal exclusively with this class of vessels.

Ships of the second class, those that are known to be infected, or that are vehemently suspected to be infected, are treated with much more rigor, and for them separate stations have been constructed, where an abundance of time is taken, and all the resources of disinfection are exhausted in the effort to make them safe again before they are restored to commerce.

There is only one port on the gulf coast where this dangerous class of vessels is treated by the local quarantine authorities, and that is New Orleans, which city has two separate quarantine stations near the mouth of the Mississippi river, one for the treatment of vessels belonging to the first class, and one for the treatment of vessels of the second class. Pensacola, Mobile and other smaller gulf ports send ships of the second class to the national quarantine station at Chandeleur.

For convenience we call these two classes of quarantine stations, respectively, inspection stations and refuge stations. I may be pardoned here for recalling attention to the fact that the establishment of refuge stations grew out of a recommendation made by me to the National Board of Health in 1879. The outfit of a refuge station need not differ much from the outfit of an inspection station, except in the provision of hospitals and warehouses; but it would astonish any one but a quarantine expert to know how very small is the extent of hospital and warehouse accommodation that is needed at a gulf refuge station. At an inspection station, of course, the need is still less, and most inspection stations in the gulf can get along very well without any provision in the way of hospitals or warehouses either.

The inspection station takes charge of ships that are presumed not to be dangerous, and the aim of such stations is to treat these ships in such a way as not to occasion any considerable delay, and as not to involve any very great cost in such a way; in other words, as not to throw too much embarrassment in the way of commerce. I do not hesitate to assert that a quarantine detention of ten days at any gulf port would act as an absolute embargo on the commerce of such port with all tropical countries subject to yellow fever; and I will assert further that a detention of five days at quarantine is more than our West India commerce and travel can very well bear. For Havana steamers any detention of more than a few hours is found to be burdensome. The disinfecting work at our inspection station must be done speedily. At the refuge stations the period of detention may be as extended as you please; in the case of the sick, until their recovery; in the case of the ship and its cargo, whatever time may be considered necessary for their purification. If the ship is empty, all that is possible in the way of disinfection can be accomplished in a few days. If there is a cargo to be treated then the character of the cargo has to be taken into account. In the



meantime there is no theoretical reason why a ship should not be disinfected as speedily at a refuge station as at an inspection station. If the methods employed at the inspection station guarantee the subsequent immunity of the ship from danger, why should not the same methods secure such immunity under all circumstances? Still the practice is as I have stated it to be.

In projecting a scheme of quarantine, the first problem to be settled is whether the disinfecting apparatus shall be carried to the ship at some convenient anchorage, or whether the ship shall be brought to some wharf where the disinfecting apparatus is stationed. A few years ago the rule was to treat the ship at the quarantine anchorage. The rule now is, since the introduction of what is commonly called the improved quarantine system, to bring the ship to the quarantine wharf.

The agents of disinfection are the same in both systems, namely: (1) Ventilation. (2) Cleanliness. (3) Sulphur fumigation. (4) Flooding with mercury bi-chloride solution. (5) The application of dry and wet heat. These agents are applied to the disinfection of the ship, to the disinfection of the ballast, to the disinfection of the cargoes, and to the disinfection of the baggage and bedding of the passengers and crews. It is necessary to make a few remarks under each of these heads.

(1) The disinfection of an iron steamer, without bilges and without cargo, can probably be accomplished with tolerable certainty by sulphur fumigation and flooding with the mercury bi-chloride solution. If we have to deal with a wooden ship with two skins, foul bilges and sodden timbers, the problem is much more difficult, and it has been generally believed the foul bilges themselves are apt to become infected, we are warranted in doubting whether the disinfection can be successfully accomplished at all, unless the inner skin is removed and the accumulations of filth in the bilges removed by scraping. I have known yellow fever to break out again in a few days in a ship of this sort where great labor had been expended in the effort to make her safe.

(2) Very few outbreaks of yellow fever have been traced to infected ballast; but cases enough have occurred to render the ballast suspicious. Clean rock ballast might, perhaps, admit of disinfection without removal from the hold of the vessel. But when dirt ballast is encountered, packed hard for a depth of several feet, prudence would require its removal. This is not always so simple a thing as many might imagine. The ballast is necessary to preserve the stability of the ship in the water. It cannot be removed safely while the ship is at anchor, and if foul ballast is removed other ballast must be put in its place. With water ballast the problem is, of course, easy.

(3) I think in the large majority of the cases we have to deal with, the disinfection of cargoes without removal from the ship is impracticable. For any effort in this direction we would have to depend almost exclusively on the sulphur fumigation, and I doubt if it could be efficiently

applied. It is hardly worth while to inquire whether cargoes can be successfully disinfected after removal from the ship, because any such practice as this would require so much time and so much expense that commerce would not submit to it. Fortunately cargoes are very rarely infected.

(4) Baggage and bedding are the most dangerous of all fomites that come to us in ships. It is therefore fortunate that their disinfection is comparatively easy. The rough baggage of crews can be boiled in simple water, or in bi-chloride solution, and subjected to fumigation. The finer fabrics, belonging to the better class of passengers, are a little more difficult to deal with, because they are liable to suffer serious damage if subjected to any of the methods suggested. It is in regard to this class of goods that the use of dry heat in the steam cylinder may be employed. But even this method sometimes does considerable damage. Besides, when large quantities of baggage in piles and bundles are treated in the cylinder, the heat is not always sufficient to guarantee the destruction of all the disease germs. I suppose a good many of those who hear me have been surprised that all I have so far said about the improved quarantine methods, so much talked about of late years, has been an incidental allusion. I have not cared to discuss at length these improved methods because I believe their value as compared with the older methods has been greatly exaggerated. The same identical agents of disinfection are employed in the old system that are employed in the new, and the only important consideration is that their application shall be as thorough as possible. I am sure that the atmosphere of a ship's hold can be impregnated with just as large a percentage of sulphur dioxide by the old method of burning the sulphur in pans, as by the new method of burning it in the furnaces outside of the ship, and it does not take any more time. I am sure that the holds and decks of ships can be just as thoroughly deluged with the mercury bi-chloride solution by the use of tubs and buckets as by the use of an elevated cistern and a hose pipe. And I am sure that all rough textile fabrics can be as completely disinfected by thorough boiling in common water, or after soaking in the solution of the mercury bi-chloride, as in the steam cylinder. It is only in the treatment of the finer fabrics, as already explained, that the steam cylinder plays a part of special importance.

Nevertheless, I would favor the adoption of the newer method by all ports that are able to bear the expense. They are more elegant, more convenient, and impress to a much greater extent than the old ones the imagination of everybody concerned.

THE PRESIDENT. The discussion will be continued by Dr. Olliphant, president of the State Board of Health of Louisiana.

DR. OLLIPHANT. Mr. President and Gentlemen: The discussion which I have been selected to open is on the interesting question proposed by the State Board of Health of Alabama.



First. Given a vessel with cargo from Central or South American ports, or the West India Islands: Can such a vessel and cargo be disinfected without discharging the cargo?

Second. Can such cargo be disinfected thoroughly, and without damage, after it has been discharged?

The subject matter of these questions is so intimately connected with the first question submitted by the State Board of Health of Louisiana, that in discussing the former, it is impossible to avoid entering very fully into a description of what the board of health of Louisiana believes to be at least part of the "requisites for a thorough system of quarantine and maritime sanitation in the light of present scientific attainment." The gentlemen who have been so happily chosen to open the discussion of the questions submitted by the board of health I have the honor to represent, will certainly appreciate this necessity, and understand that there was no intention to attempt to create prejudice for or against their views on the subject.

New Orleans may, without presumption, be said to be the port in this country that has afforded the greatest practical experience in the disinfection of vessels and cargoes from dangerous points in the countries named in the first question, and it was doubtless, with the intention of eliciting information as to the results of this experience, that one of the representatives of the state of Louisiana was chosen to open the discussion.

It is almost superfluous to state that I am here to sustain the affirmative side of the discussion; at any rate as far as the first question goes. It is a matter of almost daily occurrence every summer for vessels with cargoes from the countries named to be disinfected at the quarantine station on the Mississippi river without discharging any part of the cargoes, and without damage to the vessels or the goods they carry.

It is true that when the State Board of Health of Louisiana, under the able lead of my predecessor, Dr. Joseph Holt, undertook to replace by a system of scientific and efficient disinfection the old, brutal and haphazard quarantine methods that still prevail even to-day in many alleged civilized countries and communities, mistakes were made that resulted in more or less damage to the vessels and cargoes, but this was almost inevitable under the circumstances, and in few cases did the damage reach important proportions.

The danger of damage being done in the process of disinfection is now practically *nil*, and does not need to be considered in connection with the system under which we operate.

Of course a certain class of cargoes *cannot* be disinfected by any known process whatever without utter destruction to the articles handled, but the only cargoes of this nature that we find coming from the countries under discussion are bananas, pineapples, oranges, limes, etc., and it seems to be conceded that while the vessels carrying these fruits may

bring in disease, the fruits themselves are not to be dreaded as possible germ conveyers.

The cargoes from the countries named in the questions, that are looked on as probable germ carriers, and that can be thoroughly disinfected on board of ship without damage, consist of coffee, sugar, tobacco, woods, rubber, hides, bone, etc., and in some cases the vessels have baled, boxed and other goods loaded in Europe and carried around by way of the West Indies and Central America, that naturally come in contact, more or less, with the articles taken on board at the dangerous points visited on the way.

This is the class of cargo that is presumably referred to in the questions propounded, and I state, as a fact, that we can and do disinfect vessels and cargoes of this description at the Mississippi river quarantine station without discharging any of the goods, and without damage to ship or cargo.

It is true that we land the clothing and bedding of the crews and passengers, and all the movable textile fabrics on board the ships, and treat these articles on shore, but they cannot properly be classed with the cargo, and the handling of them is accomplished with very little extra expense and probably no extra delay. In fact, with proper appliances and thorough system, the disinfection of the articles so landed can be carried on simultaneously with the treatment of the vessel and cargo.

We have every reason to believe that our disinfection now is thorough in every detail, but it is not possible to make this assertion with absolute certainty.

It will doubtless be conceded that the clothing and bedding of the crews and passengers are the most dangerous character of fomites. It will therefore be appropriate to consider in the first place the process of disinfection which these articles are subjected to.

Heat efficiently applied is universally recognized as the disinfectant *par excellence*.

It is to this agent that we have recourse in treating the clothing and bedding, etc., from vessels that come within the scope of the questions under discussion.

The articles to be disinfected are hung on racks suspended inside large iron cylinders, through which run numerous coils of pipes which convey from a steel boiler the heat necessary to raise the temperature in the cylinders to 210° F. of dry heat, when steam is allowed to rush direct into the cylinders, rapidly raising the temperature to 230° F. of moist heat, at which figure it is kept for at least half an hour with pressure on the cylinders of about seven pounds to the square inch.

I call special attention to this statement because Dr. Cochran doubted very much whether or not the heat permeated thoroughly the articles subjected to it.

Dr. COCHRAN. I had in mind especially the experiments made by Dr.

Kinyoun. You say seven pounds to the square inch. Do you mean seven pounds above the fifteen pounds?

Dr. OLLIPHANT. We have valves connected with this cylinder that blow off at seven pounds pressure in excess of the fifteen pounds normal air pressure.

The articles are thus subjected to a heat of from 210° to 230° F. for a total period of nearly one hour, and it is found by actual experiment that under this pressure thermometers imbedded in the center of pillows and mattresses indicate the same temperature as that of the cylinders, proving conclusively that the heat penetrates thoroughly all articles exposed to its action.

Some years ago the United States Marine Hospital Service, upon invitation of the Louisiana State Board of Health, commissioned Dr. Kinyoun to investigate and report upon the efficiency of maritime sanitation as practiced at the Mississippi station at that time. Although the means of application were then far inferior to the present arrangements, Dr. Kinyoun's report showed that this step in our methods of disinfection was very certain in action, and destructive to most germs that were submitted to this test.

If then it was so very effective at that time, we are justified, with our improved appliances, in claiming to-day absolute efficiency, and believe, were Dr. Kinyoun's experiments now repeated, the result would justify the claim.

[In support, see page 267, Reports and Papers of the American Public Health Association, Vol. 11, in which Dr. Sternberg states that steam at a temperature of 230° F. maintained for a period of one or two minutes, or of 222° F. maintained for ten minutes, will infallibly destroy the spores of bacilli which constitute the most difficult test of disinfecting power known.]

At the same time that this heat disinfection is being applied a force of men is engaged with mercuric chloride solution in washing down decks and cabins, and sprinkling all articles that would be damaged by heat disinfection. This solution is made of a strength of 1 to 1,000. There is no special skill required in its application, care as to thoroughness being the main point to be considered. This solution is contained in a tank of about 7,000 or 8,000 gallons capacity, placed at an elevation of about forty-five feet. The tank is connected with pipes leading along the wharf. By means of a rubber hose with nozzle and spray attachments, a stream of the solution can be conducted and thoroughly applied to any and all parts of a ship.

As this process of disinfection is claimed to be efficient, we will now consider the last step, *i. e.*, the fumigation of a ship's hold and cargo with sulphur di-oxide.

It is apparent, if reference is made to the report of Dr. Kinyoun, that his experiments were not very flattering to this process as practiced at



that time. But with the improvements made since then, we believe this portion of our service has been made to equal if not excel the efficacy of our other methods.

Formerly the  $\text{SO}_2$  generated was obtained by the combination resulting from the voluntary combustion of the sulphur in a furnace to which oxygen was admitted in unlimited quantity.

Dr. Cochran in his paper made the statement that the old methods—I do not refer specially to methods immediately preceding the present system—suffice for the purpose of saturating the hold of a ship with  $\text{SO}_2$  gas as well as any that have been devised since.

It is a well-known fact that combustion cannot take place in an atmosphere with one-half its oxygen replaced by  $\text{SO}_2$ —such an atmosphere would extinguish combustion. That being the case, it can readily be seen that by former methods a ten per cent. gas was the highest possible attainment. As a matter of fact, tests showed from four to eight per cent. in our former system which is claimed to be superior to the pot system. With this weak gas introduced into the large volume of air contained in the hold of a ship, it can readily be imagined to what degree of dilution it would be subjected, and what length of time would be required to replace or saturate the ship's air by pouring this weak gas into it.

I am asked by what authority I make the statement that an atmosphere containing ten per cent. of  $\text{SO}_2$  will extinguish combustion.

If the doctor will allow me, probably I would as well make the statement now as on the completion of this paper—I give Dr. Albrecht as my authority and the following test in corroboration:

On the completion of our new furnace I was naturally solicitous, considering the short lead of pipe to hold of ship, as to whether or not we ran risk of setting fire to a vessel. Dr. Albrecht assured me of the impossibility of combustion in an atmosphere with one-half its oxygen replaced by  $\text{SO}_2$  gas. Having tested the gas and knowing it to be stronger than ten per cent., we made the following experiment: A hogshead filled with shavings saturated with coal oil was set on fire and the gas played on it. The voluminous flames were almost instantly extinguished. On examination afterwards it was found that even the oil on the shavings had not been consumed. This proved conclusively to my mind the statement made by Dr. Albrecht.

With the improved apparatus now in use, we consume almost all the oxygen in the air supplied to the furnace, and generate a gas of from fifteen to twenty per cent. strength. We also favor the displacement of the air contained in a ship's hold by introducing this gas, twice as heavy as the atmosphere, into the bottom of the ship and at the same time exhausting the foul air contained in the ship through a pipe connecting with and tapping the ship's hold almost flush with the deck. By this means we lessen the dilution of our  $\text{SO}_2$  gas and favor the dis-

placement of the atmosphere; at the same time we are passing this supposed infected air over our heated sulphur in the furnace at a temperature of about  $600^{\circ}$  F., literally consuming all organic matter, and converting almost the entire oxygen into sulphur di-oxide. Certainly the atmosphere passed through the furnace is most thoroughly disinfected, both by heat and  $\text{SO}_2$ , and we believe by the length of time devoted to a ship's hold, that most, if not all the air contained therein, has passed through this ordeal

Any particles of contaminated air that may possibly have escaped the force of our suction current from the ship we believe will be relieved of all living organisms by its oxygen being materially diminished and replaced with the deadly  $\text{SO}_2$  gas; practically an atmosphere permeated with  $\text{SO}_2$  to the extent of ten per cent. is considered germicidal. With our present apparatus we are confident we easily obtain that degree and even stronger

Our apparatus consists of a boiler-like cylinder containing one or more pans, arranged one above the other with air spaces connecting them alternately at the front and back, whereby the air is made to pass over the contents of all the pans. Underneath the cylinder is a furnace arranged in the same manner as for steam boilers, with ash pan, etc., which furnace serves to keep the sulphur in the first pan in a molten state and the heat from this pan melts the sulphur in the pan above. An air-tight pipe from the hold of the vessel to be fumigated, is connected with the furnace immediately over the surface of the bottom pan to supply oxygen for the generation of the sulphur di-oxide. This pipe is provided with a cock for obtaining samples of the air, and a valve for regulating its supply to the furnace. An eleven-inch discharge-pipe taps the furnace at the top, curving over, leads down into and within six inches of the bottom of a reservoir. From the reservoir the gas is drawn by a "Sturtevant fan" through an eight-inch pipe, issuing from the side of the reservoir, but having a curved section on the inside reaching nearly to the top, and is forced through a lead of pipe, extending through the roof of the tug to the pilot-house, and thence to the bottom of the ship's hold. It will thus be seen that, as the gas entering the reservoir is lead nearly to the bottom of the reservoir and having to leave again through the curved section of pipe near the top, the direct current is broken and any particles of burning sulphur that may enter are apt to be lodged at the bottom. The difference of size of pipe of entrance and exit is made with a view of having a slow current in and from the furnace to the reservoir through the fan; this result naturally following as the same amount of gas must necessarily leave the reservoir through the small pipe as comes in through the large pipe, thereby allowing longer contact of the air with the surface of the sulphur.

You will observe we now have a connection between the compartment to be disinfected and the furnace, by which we can keep up a continuous



current without the admission of any air from the outside world. After charging the pans with sulphur, the furnace is closed and the fire started in the box underneath. In a few minutes the sulphur is in a molten state—not burning, because it has no oxygen supply; then the fan is started driving a current from the reservoir into the hold and producing a return current in second pipe from the hold to the furnace. We now have the apparatus in full operation, drawing the foul and infected air from the ship's hold into the furnace, literally burning it and converting its oxygen into  $\text{SO}_2$ , and sending this deadly gas to the bottom of the ship.

I believe with the above appliances ships with the ordinary cargoes can be and have been thoroughly disinfected without discharging cargoes. Cargoes thus disinfected in the hold of a ship can be similarly treated when removed to a compartment specially prepared for the purpose, but this procedure would entail extra time, labor and expense, and not render the service any more efficient.

From a practicable standpoint one can conceive of particular kinds of cargoes, rags, baled goods, etc., that would not be thoroughly disinfected by the methods mentioned. Even these could be disinfected by proper exposure to our agents, but as such exposure would not be practicable, this class of goods is not brought to our port in quarantine season from the countries named in the questions under discussion.

I think Dr. Cochran did not understand one or two statements in my paper—one of which is in regard to the generation of the sulphur gas. The doctor makes a statement that according to my own paper I would have to admit that we could only generate a gas of ten per cent.

Dr. COCHRAN. Undoubtedly if you draw the air out from the hold of the ship.

Dr. OLLIPHANT. If the doctor will understand, my original statement was that an  $\text{SO}_2$  gas cannot be made stronger than ten per cent. by burning sulphur in the atmosphere. We do not claim to generate this gas in that manner. The sulphur is kept in a molten state by a fire underneath the pan, and oxygen or air is supplied simply for chemical combination.

Surely, sulphur in a molten state is in the most favorable condition for chemical union with oxygen, and it is believed that a supply of air properly regulated will be deprived of nearly all its oxygen, which latter is converted into  $\text{SO}_2$  gas. As a matter of fact, we have by actual test obtained a gas of eighteen per cent.

Dr. Cochran also expresses his doubts, in the absence of facts, as to whether this gas, let down into the ship at one point, would permeate the whole ship.

All large ships are divided into compartments, and each compartment is fumigated.

Dr. Holt, with a view to removing just such doubts, placed vessels containing water at the most remote point from the entrance of the

gas in the hold of a ship loaded with coffee, covering these vessels with sacks of coffee, and after the completion of the fumigation this water, on examination, proved to be strongly impregnated with sulphur. I propose making other experiments the coming summer.

As to the impracticability of thoroughly disinfecting baled goods, I agree with the doctor fully, but it is to be remembered, as I stated in my paper, no such goods are shipped from intertropical ports to our port during quarantine season.

As to the damage done to textile fabrics in heat disinfection I will state, that the most delicate silks and laces have been subjected to this process without being injured in the least.

Regarding the question of ballast I will state that our board, recognizing the impossibility of disinfecting earth-ballast, has prohibited the bringing of such ballast from infected ports.

Dr. SALOMON. Mr. President and members of the conference: I have been requested by Dr. Olliphant to continue the discussion of this subject, and will ask your attention for a few moments:

The question as to what constitutes a thoroughly efficient system of quarantine, offering the greatest assurance to seaports subject to invasion of epidemic disease through their commercial relations with infected foreign ports, having been discussed, and it being admitted that the methods in operation in Louisiana meet the requirements and guarantee a reasonably certain protection, it necessarily follows without argument, that seaport towns not pursuing such methods while allowing intercourse with infected places, not only do not protect themselves, but expose other and adjoining states to the liability of invasion by disease.

The liability may be remote, it is true, still it exists, and existing, it becomes a matter of serious consideration what measures should be adopted by the several states to protect themselves without causing conflict and disagreement, which never results in good.

It is to be regretted that no successful effort has yet been made to solve this problem of self-protection; and it is with this object in view that the question has been propounded, in the hope that this conference will be able to arrive at a conclusion whereby all interested states will be able, through their duly constituted health authorities, to act in harmony, by means of a common understanding as to the needs of each.

It is not our intention to reflect upon the good faith or proper vigilance of any particular state; and while granting to each the right to act as it sees fit in the matter of quarantine protection, and the adoption of whatever measures may be selected, and by it considered adequate to meet the needs of proper sanitary protection, we still claim the same right of refusing to recognize such methods as offering a guarantee of protection if the system in vogue does not meet all the conditions considered essential to a thorough, efficient and modern

quarantine service, or system of maritime sanitation at ports of arrival. In the exercise of that right, therefore, it necessarily follows that we seek for the best means of preventing the introduction of pestilential disease through other ports, when our own ports are provided with what we deem adequate methods of protection, and while so doing, leave without question to each state to provide its own methods of quarantine; but say that others should not be the means of afflicting us.

We of the State of Louisiana, foremost in the matter of quarantine improvement, believe, with our complete methods of fumigation and disinfection of vessels, cargoes, baggage and ships' effects, coupled with a reasonable period of detention of passengers and crews after the work of sanitation is completed, that we provide all that can be done in the way of keeping out pestilence; and if the health authorities of other states do not deem this sufficient for their protection from invasion through Louisiana, it is their duty to protest; and, failing to secure a better guarantee of safety, to adopt such measures as become necessary to defend themselves.

We claim the same privilege.

For several years after the epidemic of 1878, which scourged the Mississippi valley and which found its way to this country through New Orleans, the other states exposed to the direct danger of another visitation expressed their want of confidence in the efficacy of the methods then in vogue in Louisiana, and adopted such measures as they thought best for self-protection.

This want of confidence and a desire for greater assurance of safety gave rise to the National Board of Health through whose officers and inspectors such measures were instituted as satisfied the doubts of complaining states, and through traffic went on uninterruptedly.

But for reasons which it is unnecessary to mention at this date, congress deemed it wise to take away the powers of said board and leave to each state its own methods of protection.

I refer to this, not for the purpose of reviving any of the former arguments either for or against the National Board, but only to direct attention to the fact that, Louisiana at one time showing itself derelict, other states sought and found means which at the time satisfied them to a reasonable extent.

The same conditions as then existed at all the gulf ports, exist to-day as to some of the ports on the Atlantic and the Gulf of Mexico. A few have, at an enormous expenditure of money and incessant effort at improvement, provided themselves with quarantine disinfecting plants of modern construction; some, during the danger period, maintain strict non-intercourse, while others offer no protection at all or their methods are inadequate; and it is as to our relations with these two latter that we are particularly interested and ask the deliberations of this conference as to what is the best course to pursue.



We claim that such ports should not be allowed to give free entrance to either freight, baggage or persons whereby the least risk of infection is incurred, as it is in such through traffic that great danger lies, and against which we protest.

While Louisiana with its efficient quarantine system and untiring vigilance is seeking to protect itself through its own ports of entry, it is ever anxious lest through other ports it may be visited with yellow fever from Havana or small-pox from Mexico. And if we are to be exposed in such manner, where, I may ask, is the necessity of our own methods with their delay and consequent cost to commerce.

While imposing a detention on shipping after thorough disinfection, said detention being for observation, and thus providing a time for allowing the development of disease before giving a vessel *pratique*, we seriously and emphatically protest against a person being allowed to come to New Orleans from Havana in less time than that occupied in undergoing surveillance at our quarantine station when coming direct.

It is with the greatest gratification that we learn of the recent improvements in the quarantine service at Tampa, Fla., but Tampa is one of the many ports of entry in the vast peninsula of Florida and through many of these ports, passengers with their baggage, can and do come to New Orleans within three or four days of the time of leaving Havana; and it should be the duty of the board of health of that state to provide the necessary safeguards against the introduction of disease.

True, an effort is being made in this direction. A boat has been put in service to patrol the coast, and this will, to some extent, prevent illicit intercourse, but not entirely so, and therein lies our source of danger.

Another, and what we consider a more serious source of danger, and one against which Louisiana has protested, is the inadequate system at Tampa. It is a matter of history that persons, for the purpose of evading detention at the Mississippi river quarantine station, have taken ship at Havana, landed at Tampa, and come through to New Orleans in three days or a little over. True, they were admitted upon certificates from the health officer at Havana and their baggage disinfected, but we claim that there is not only a possibility, but a probability, that the health officer can be deceived as to the acclimatization of such persons, with the risk of attending results.

Again, persons destined for points north of latitude  $38^{\circ} 54'$ , can go from Havana to Tampa without further question than as to their apparent destination, and with their baggage coming from a probably infected quarter, go through without detention or disinfection, and proceed, if they so will, to Mobile, Memphis, New Orleans, or other points, open such baggage in some boarding house, hotel or private residence, and thus expose the community to the liability of infection of yellow fever.

During what is considered with us the danger period of last year, the board of health of the State of Louisiana protested against being thus subjected to the danger of epidemic which we were using our means and energies to keep away, and this protest failing of securing any change, we adopted measures which we thought best for our protection. The health authorities of Florida were notified that we would not allow any persons coming under the above mentioned conditions, to enter Louisiana without disinfection of their baggage, or if baggage had been disinfected at Tampa, without undergoing a detention for observation such length of time as would assure safety to the community.

Railroads were notified not to carry such passengers into Louisiana, and that if such were found they would be taken from the trains and sent to the nearest quarantine station.

Florida took umbrage at this action, and it was charged that Louisiana had proclaimed quarantine against Florida. Not so. Louisiana was simply endeavoring to enforce its own regulations against passengers and baggage from Havana. It is a difference of small import whether passengers come to New Orleans via the Mississippi river or via Tampa. The resulting danger is the same, and we proclaim the right to prevent such travel without proper and necessary sanitary precautions, by whatever route it may come.

Therefore, I repeat, we did not quarantine persons or freight from Florida, but we did say, that through the assistance of Florida's regulations, persons should not violate our own quarantine regulations against Havana.

It was and is still far from the intention of Louisiana to provoke controversy with Florida. We simply ask that she shall not expose us through a lax system. If the State of Florida alone were to receive such passengers and retain them within her borders, we should enter no word of protest, but be ever vigilant for the first spark of danger. But when they can come to us without having undergone what we consider proper and efficient sanitary treatment, we protest and endeavor to prevent.

In view of all the foregoing we come to this conference asking the question propounded, seeking advice or suggestion if our views are not concurred in, and requesting an expression through resolution or otherwise whereby this vexing problem may be solved in the interest of harmony between state health authorities, and for the better protection of the people with whose safety from pestilential disease we are charged.

The PRESIDENT. The next subject for discussion will be the question proposed by the State Board of Health of Ohio:

1. Should state boards of health have control of the sanitary arrangements of all school buildings to be erected within their boundary?

2. What is the best plan to secure such control?

Discussion opened by Dr. Louis Balch, of Albany, N. Y.



Dr. Balch took the position that local boards of health, and not state boards, should control and look after the sanitary arrangements of school buildings. He gave many examples to show the difficulties a state board would meet with in attempting to remedy the many evils connected with school buildings.

Dr. PROBST. Dr. Balch has mistaken the drift of the question proposed by Ohio. He has confined his remarks to school buildings already erected, and to the various nuisances arising in school life. It is the school buildings *to be erected* that we would urge should be under the control of some central authority. This need not necessarily be the state board of health, although it is to be supposed that this board will better understand the sanitary requirements of school buildings than any other. In our state the matter of erecting school buildings, and the ventilation, heating and lighting of the same, is left entirely in the hands of school boards or school directors—men often guiltless of any knowledge of sanitation or the sanitary requirements of school buildings. Especially is this true of the smaller towns and country districts. It has seemed to us that it would be advisable to require the plans of all school buildings to be submitted to the state board of health, or to some other state authority, and to have its approval before allowing the buildings to be erected.

As for the inspection of school buildings already erected, our laws require our local boards of health to do this semi-annually, and we would not wish to have this changed.

The question was further discussed by Dr. McCormack, Dr. Balch and others.

Adjourned until ten o'clock Monday.

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## SECOND SESSION.

The president announced as the first order of business for the second day the discussion of the question proposed by the State Board of Health of Kentucky. What should state and local boards of health teach, and what should they do prevent consumption? Dr. Bryce opened the discussion by reading the following paper:

### How Consumption is Spread, and Measures for its Prevention.

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Dr. P. H. BRYCE, M. D., *Secretary Provincial Board of Health of Ontario.*

In view not only of the fact of consumption being of all causes the one producing the greatest number of deaths in temperate climates, wherever settlement is advanced, but also because of public attention having recently been specially directed to the experiments whereby it was hoped Dr. Koch had obtained a sovereign remedy for the disease spread over the known world, it is proper that we should anew point out the para-

mount importance of the public realizing the nature of the conditions under which, in every-day life, the disease gains a foothold in the individual, and of how people generally can do much to lessen the dangers to which they are exposed.

1. *History of the Disease.*—Consumption means a wasting or consuming of the physical organism, and owing to this, received the Greek designation, phthisis (a wasting). Owing to little nodules, or tubers appearing in the lungs and other tissues of the body, it has been called tubercle, and is now scientifically designated tuberculosis. The real nature of the disease has been vainly sought by physicians from the time of Hippocrates, who believed it to be a pus disease originating in the brain, down to within the last twenty years, when biological studies began to throw some light upon its probable cause.

So long ago as 1761, Morgagni and his school believed in the contagion of consumption, but this view has not been generally held till the present day, when, through direct experiments, Villemin, in 1866, showed, by inoculating rabbits with tuberculous matter, that the disease could be artificially produced, has its infectious character been established.

He concluded:

1. "Tuberculosis is a specific disease.
2. "It is an inoculable disease.
3. "It may be successfully inoculated in rabbits from man.
4. "It belongs, therefore, among the virulent affections, and takes its place in classification with small-pox, scarlet fever, and more especially with glanders."

He declared that the disease arises by germs suspended in the air, or contained in the peculiar tuberculous matter. The development of the science of micro-biology or bacteriology has only served to confirm Villemin's conclusions.

"By these investigations of the pest the stage had been quietly set for the final scene in the history of tuberculosis." Koch had solved the problem of separating or isolating individual micro-organisms, and in 1882 gave to the world his memorable work on "The *Ætiology of Tuberculosis.*" In it he described the cause of consumption or tuberculosis as being a germ or microscopic plant in the shape of a slender microbe rod, five times as long as broad, generally curved in shape, with rounded ends, and provided with spores (seeds) which represent its permanent form. These were found by him in the tubercles or nodules, from the lungs and the brain of man, from inflamed scrofulous glands, joint inflammations from the chalky nodules of the lungs of animals, the hog, ape, guinea-pig, rabbit and other animals. Ten years have served only to confirm Dr. Koch's first conclusions, and have greatly extended our knowledge regarding the susceptibility of animals to the disease, and of many conditions under which the disease is propagated and disseminated. Dogs, cattle, chickens and other fowls have all been found sub-

ject to tuberculosis; while its dissemination by means of the flesh and milk of animals has recently been proven by indubitable evidence.

2. *Prevalence of the Disease.*—It will not be wondered at that a disease with a history so ancient, should, during so many centuries, have found its way into every portion of the habitable globe, wherever the conditions were such as to make its existence possible. That it has spread amongst all civilized races, through favoring conditions, will be shown later on; that there are few families in all Europe whose ancestors have not at some time or other suffered from it, will probably be admitted, though that there are many existing families who have no history of ancestral taint for several generations, abundant evidence would seem to prove. This being admitted, and the affinities of the disease with glanders and leprosy being assumed, the comforting conclusion is forced upon us, that as compulsory destruction of glandered horses has eradicated this disease from many communities, and as segregation or isolation of lepers has practically cast this opprobrious disease out from amongst Anglo-Saxon races, so consumption, in some perhaps far off and ideal condition of human society, may similarly become a matter of only historical interest to the physician and statistician.

As the causes and contagiousness of consumption have become known, so its hereditary nature becomes less insisted upon, and the possibility of the disease being induced, becomes proportionately prominent.

To illustrate, however, the task society has before it, the following figures are given:

During the twenty-five years ending 1886, the average total deaths from phthisis have been 50,000 yearly, in England, and those from other tubercular affections, 17,700; in all, nearly 68,000.

That however great this may be, it means a notable reduction, is gathered from the following tables:

TABLE 1—*Mortality per Million. Persons of All Ages.*

| PERIOD.                        | 1857-60. | 1861-70. | 1871-80. | 1881. | 1882. | 1883. | 1884. | 1885. | 1886. | 1887. |
|--------------------------------|----------|----------|----------|-------|-------|-------|-------|-------|-------|-------|
| Phthisis, . . .                | 2,679    | 2,475    | 2,116    | 1,885 | 1,844 | 1,870 | 1,812 | 1,752 | 1,718 | 1,591 |
| Other tubercular diseases, . . | 804      | 784      | 762      | 705   | 729   | 707   | 738   | 654   | 727   | 658   |

TABLE 2—*Ontario, 1881. Phthisis in Persons Over One Year.*

|                             | Number. | Per cent. of<br>deaths of per-<br>sons over<br>one year. | Ratio to<br>population. |
|-----------------------------|---------|----------------------------------------------------------|-------------------------|
| In ten cities, . . . . .    | 464     | 14.6                                                     | 2.04                    |
| In towns, . . . . .         | 213     | 17.0                                                     | 2.01                    |
| Rest of Province, . . . . . | 1,720   | 13.0                                                     | 1.08                    |

Ratio of consumption to all causes:

In cities, . . . . . 14.67 per cent.

In towns, . . . . . 17.00 per cent.

In country, . . . . . 13.00 per cent.

TABLE 3—*General Death Rate from Phthisis in 100,000 Population—England.*

|                      | A, AGRICULTURAL PURSUITS. |        | B, INDUSTRIAL PURSUITS. |        |
|----------------------|---------------------------|--------|-------------------------|--------|
|                      | Men.                      | Women. | Men.                    | Women. |
| 1858-1867, . . . . . | 209                       | 253    | 243                     | 275    |
| 1868-1877, . . . . . | 190                       | 205    | 230                     | 224    |
| 1878-1886, . . . . . | 158                       | 165    | 191                     | 179    |

TABLE 4—*Death Rate from Phthisis—England.*

|                    | MEN. |    | WOMEN. |    |
|--------------------|------|----|--------|----|
|                    | A.   | B. | A.     | B. |
| 1850-57, . . . . . | 100  |    | 100    |    |
| 1858-67, . . . . . | 79   | 92 | 87     | 95 |
| 1867-77, . . . . . | 67   | 66 | 71     | 77 |
| 1878-86, . . . . . | 59   | 72 | 56     | 61 |

In the above English tables are found many interesting facts; of these one is notable, viz., the fact as seen in Table 3, that in agricultural communities the proportion of deaths from phthisis thirty years ago was almost equal to that of those engaged in industrial pursuits. While this serves to especially illustrate the insanitary condition of the farm laboring class in those years, it points similarly to the fact that even with the



many modern improvements in the sanitary condition of work-shops, yet the overcrowding which is induced by increased manufacturing industries, has failed to equal the improvements which have marked the habits of life of the English working classes. The great difference between the class in England and in Ontario is gathered from the sub-joined figures (see Table 2).

While the reduction of the death-rate from phthisis in those countries where modern sanitation has gained a sure foothold, is most satisfactory, yet the scientific investigations of recent years have shown that the existence of phthisis is by no means limited to the human race. As long ago as 1846 Klencke urged the probability of the milk of tubercular cows being capable of spreading the infection. And in France and Germany rigid inspection of dairy cows is required. That such inspection is required will be gathered from the following statements:

In Edinburgh, of 660 cows, thirty-seven had mammitis (or six per cent. probably, tubercular).

Dr. Cruikshank, in 1889, in the report of the agricultural department of the privy council, states from his own observations and experiments that:

(1) Cows with tuberculosis of the udder are to be found in dairies in this country.

(2) The milk of these cows is, as a rule, mixed with the general supply.

(3) The milk, in cases of udder tuberculosis, contains tubercle bacilli.

(4) Rabbits inoculated with or fed upon milk containing tubercle bacilli contract tuberculosis.

From these facts it is reasonable to conclude that there may be danger from using the milk of cows with tuberculous udders, and therefore strict inspection of dairies should be enforced.

That, however, this may not be sufficient to ward off all danger, is gathered from the statement of Prof. Nocard, at the Paris congress of 1888, to the effect that it is almost impossible to tell when the udder has become involved, until towards the last stage of the infection.

The recent very complete experiments reported by Dr. Ernst, of Harvard University, give some idea of how great this danger from milk may become.

In February last he appeared before the committee on public health of the Massachusetts legislature, and gave evidence on the results of some experiments made at the instance of the society for promoting agriculture, and conducted by Dr. A. K. Stone. He stated that of 1,200 to 1,300 answers to a circular all but two expressed their belief in the possibility of transmitting tuberculosis by milk. He has records of probably infection of children from the milk of tuberculous mothers, and cases of infection from a tuberculous cow. Veterinarians give instances of infection of calves from tuberculous cows, and he has in his experiments in



the most positive way, proved the extreme infectiousness of milk in cases of tuberculous cows.

Dr. Ernst started out with the intention of determining, if possible, the infectiousness of the milk of cows where the udder did not appear diseased. One hundred and twenty-six distinct and separate examinations of the milk from different cattle were made—each examination meaning three or four days' work. As the result of careful examination, out of 126 series of cover glasses, the bacillus tuberculosis in milk coming from cows having no tuberculous udders at all (shown by post mortem) was found in sixteen cases, or in thirteen per cent.

"By inoculation of the same milk in rabbits and guinea-pigs, in seventy-four inoculations we produced six cases of tuberculosis, the inoculation being from only one to three drops of milk. This means in over eight per cent. in rabbits, and in over thirteen per cent. guinea-pigs.

"From feeding experiments with twelve pigs, nearly fifty per cent. became tuberculous, and of twenty-three calves, eight or thirty-three per cent. became tuberculous."

Examination made of samples of milk collected from the city supply of Boston similarly showed, both by inoculation and microscope, even in the mixed milk taken from a number of cows, the presence of the virus of tuberculosis.

That this is possible may be judged from the recent experiments of Forster, who has found that bacilli of tuberculosis live in milk at least ten days.

But not only is tubercle prevalent in milch cows since the inspection of carcasses intended for food, carried on especially in France and Germany, also shows a very notable percentage of tuberculous animals.

Toussaint in the *Congres a Tuberculose*, held in Paris, 1888, gives the percentage of tuberculous cattle at six per cent., while more recent German statistics taken from the report of the royal health officer, Berlin, for 1889, give the following results:

|                                                             | Total cattle inspected. | Total infected. | Per cent.                                          |
|-------------------------------------------------------------|-------------------------|-----------------|----------------------------------------------------|
| Sweden, 1886, . . . . .                                     |                         | 906             |                                                    |
| Sweden, 1887, . . . . .                                     |                         | 1,110           |                                                    |
| Rotterdam, 1887, . . . . .                                  | 14,136                  | 344             | 2.5                                                |
| Rotterdam, 1888, . . . . .                                  | 16,918                  | 543             | 5.2                                                |
| Amsterdam, . . . . .                                        | 28,000                  | 495             |                                                    |
| Munich, 1888, . . . . .                                     | 17,766                  | 1,022           | 5.7                                                |
| Grand Duchy Baden for three-fourths of year 1888, . . . . . | 6,421                   | 338             | 5.2                                                |
| Dresden, . . . . .                                          |                         |                 | 1.7 of all cattle.                                 |
| Saxony, 1889, . . . . .                                     | 34,975                  | 3,986           | 11.4 (localities varied from 1.1 to 15.8 per cent. |
| Augsberg, 1889, . . . . .                                   | 13,193                  | 512             | 3.95                                               |
|                                                             |                         | Cows alone      | 7.3                                                |

It was found in Saxony that tuberculosis increased with age in cattle, nearly half the cases being in cattle over six years of age.

Another fact of extreme importance has been proved by Bayard, who, in 1889, found that the ratio of frequency of occurrence of tuberculosis in men and animals in different districts was almost parallel in both cases.

The absolute necessity for enforcing sanitary inspection and improvements is seen from the investigations of Hirschberger, who injected guinea-pigs with the milk of tubercular cows. While fifty-five per cent. of these died of tuberculosis, he was able to find the bacilli of tuberculosis in the milk in only one instance.

Poultry, as has been pointed out, are very subject to the disease.

3. *Predisposing Causes*.—While much has been said and written on this subject, daily evidences go to show that unsanitary conditions under all circumstances, and understood as applying to every state and stage of human existence, are the largest factor in the causation of consumption.

(a) *Influences of Heredity*.—Popular and professional opinion have both accorded to heredity the principal exciting cause; but the most scientific teachings of the present day are that all that is inherited is a tendency due to imperfect development, not of organism in its gross or composite form, but in the structural or cell elements of its tissues. It will be manifest that if the delicate mother has a child weak at birth, it is probable in the very nature of things that it will be imperfectly nourished by her, and the innate tendency will be rather developed than

lessened. That this is true seems to be borne out by the fact of the enormous numbers of children dying within the first year or two of birth from tuberculosis of the intestinal tract and neighboring glands.

Cornil has shown that the bacilli are taken into the system without any necessary abrasion of the mucous membrane, and that the intestinal tract should be the common avenue of infection in children, will be accepted without discussion.

The urgent necessity for increased attention to this period of danger is illustrated by statistics. Thus the Registrar General of England has shown that while the death rate per million from phthisis and tubercular brain disease since 1861-70 has decreased, that from tabes mesenterica and scrofula has increased, thus:

|                    | Phthisis. | Hydrocephalus, tuber-<br>cular meningitis. | Tabes mesenterica. |
|--------------------|-----------|--------------------------------------------|--------------------|
| 1861-70, . . . . . | 968       | 2,213                                      | 2,267              |
| 1871-80, . . . . . | 767       | 1,800                                      | 2,550              |

To the mal-nutrition which plays so fatal a part in those with a tendency, as infants, we can see that the tendency is by no means at an end with the teething period.

Everywhere, but especially in the dwellings of the poor is seen crowding with uncleanness, and food, poor both in amount and quality, and its preparation.

The following from the local government's board report for 1889 shows the necessity for attention to this source of disease: "Milk continues to be the chief subject of analysis; out of 26,344 samples of various article of food, drink and drugs, no less than 10,859 were of what professed to be milk, of which 11.9 per cent. were condemned." "While in one of the London districts, St. Pancras, out of 129 samples, no less than fifty-five, or nearly forty-three per cent. were condemned."

The following instance illustrates the enormity of the crime of adulteration, and the inadequacy of the fine to prevent adulterating:

"In another case in which the milk vender stated that he rarely sold more than a farthing's worth at a time, the sample taken was found diluted with fifteen per cent. of water, but the magistrate considered that one shilling was an adequate fine. On this decision the public analyst comments as follows: 'It is these small portions of milk which

are used to fill the bottles of young children, and are often diluted by the parents after the purchase, and thus it is impossible to say how weak the milk becomes before the same is used, but it is not difficult to understand why the mortality amongst the children of the poor is so great.”

As might be inferred, the dangers minimized by the small amount of milk used by the poorer classes, are on the other hand increased from their milk supply, of the poorest quality, being more likely to come from dairies inferior both as regards the healthfulness of the cows, and the cleanliness of their surroundings. The high mortality amongst the children of the poor may fairly be charged in a large part to the marasmus arising from mal-nutrition due to insufficient and unwholesome food.

Under these circumstances it is plain that whatever inherited weakness there may be, the subsequent conditions result in a lessening of the natural resistance of the system to the disease.

Councilman well illustrates the difference in the resisting power of different individuals by the amount of connective tissue formation thrown around infected points, as a cautery or miliary tubercle. He says:

“In some cases (in autopsies) almost nothing of this is seen and the disease passes rapidly into inflammation and caseation. These differences show themselves in different organs of the body and indurated and healed apices of lymph and bronchial glands are common.”

Referring to the assumed predisposition in combating hereditary tuberculosis, he further says: “All conditions of life which produce a low state of vitality in the system, predispose to consumption.”

Turning then to some of these, in addition to what has been said *re* improper and deficient food, we would place first:

(b) *Overcrowding*.—The following statistics *re* increase of general mortality according to the population per acre, is of interest.

James T. Hammach, F. S. S., assistant superintendent of statistics, Registrar General's office, says, speaking of the relation between density of population and mortality from consumption: “The facts about to be adduced will show that density of population, so far as being an unimportant element with regard to the mortality from consumption, is in fact a very potent agent in producing that fearful and destructive malady.

“Overcrowding is of two kinds. (1) On the superficial area, (2) in cubic space; and either may exist independently of the other. In the country where there is no overcrowding, a laborer's cottage may be so crowded by its inmates that disease may break out; while in the case of model lodging houses and many well-constructed public institutions, it is quite possible, by a suitable construction of buildings, to have a dense population living healthily because occupying a large cubical space.



“Thus in the districts with the least density, the deaths from consumption were 375, and in those of most density, 485 to 100,000 living; while other lung diseases caused 914 deaths in the densest, against 659 in the least dense districts out of the same numbers living—the deaths out of the living, not the proportion they bear to the mortality from all causes, being the true index to the fatality of particular diseases.”

In the Registrar General's report the mortality from different diseases in London and twenty-four other city districts with an aggregate population of 3,769,000, was contrasted with the mortality from the same diseases in counties containing a population of 3,559,000, chiefly engaged in agriculture.

TABLE 5.

| GROUPS OF TEN DISTRICTS EACH. | DENSITY.                     | ANNUAL RATE OF MORTALITY PER 100,000 LIVING. |                                           |
|-------------------------------|------------------------------|----------------------------------------------|-------------------------------------------|
|                               | Square yards to each person. | From phthisis.                               | Other diseases of the respiratory organs. |
| No. 1, . . . . .              | 180                          | 375                                          | 659                                       |
| No. 2, . . . . .              | 119                          | 405                                          | 771                                       |
| No. 3, . . . . .              | 35                           | 485                                          | 914                                       |

The tendency to consumption, Dr. Farr remarks, was increased twenty-four per cent. to typhus fifty-five per cent. in the town districts; but as the absolute mortality from consumption is three times as great as from typhus in towns, and nearly four times as great in the country, the excess of deaths from consumption, caused by the insalubrity of towns, is greater than the excess of deaths by typhus, a fact which has been hitherto overlooked. The deaths from phthisis were 437 in the towns and 351 in the country districts, to 100,000 living.

That this increased mortality has its relations to the directly increased dangers of infection may be seen from the following investigations on the relative number of germs, and amount of organic impurities in houses with different number of rooms, by Prof. Carnelley, of Dundee :



|                                        | Number of cases. | Average space per person. | Average carbonic acid. | Average organic matter. | Average micro-organisms. |
|----------------------------------------|------------------|---------------------------|------------------------|-------------------------|--------------------------|
| One-roomed house—                      |                  |                           |                        |                         |                          |
| Dirty, . . . . .                       | 7                | 200                       | 9.9                    | 18.1                    | 41                       |
| Dirtier, . . . . .                     | 13               | 221                       | 10.7                   | 13.5                    | 49                       |
| Very dirty, . . . . .                  | 6                | 220                       | 11                     | 15.1                    | 93                       |
| Clean, . . . . .                       | 1                | 295                       | 8                      | 13.1                    | 18                       |
| Two-roomed houses—                     |                  |                           |                        |                         |                          |
| Very clean, . . . . .                  | 2                | 273                       | 12.5                   | 10.8                    | 10                       |
| Clean, . . . . .                       | 4                | 264                       | 9.3                    | 7.7                     | 22                       |
| Dirty, . . . . .                       | 7                | 233                       | 9.4                    | 11.2                    | 69                       |
| Naturally ventilated boarding schools— |                  |                           |                        |                         |                          |
| Cleaner, . . . . .                     | 12               | 167                       | 19.7                   | 18.1                    | 91                       |
| Average cleanliness, . . . . .         | 12               | 166                       | 14.2                   | 16.2                    | 125                      |
| Dirtier, . . . . .                     | 12               | 191                       | 22.5                   | 15.2                    | 198                      |
| Mechanically ventilated schools—       |                  |                           |                        |                         |                          |
| Cleanest, . . . . .                    | 7                | 194                       | 12.5                   | 12.7                    | ..                       |
| Clean, . . . . .                       | 11               | 155                       | 12.8                   | 8.3                     | 10                       |
| Less clean, . . . . .                  | 4                | 152                       | 10.8                   | 9.8                     | ..                       |

The statistics already quoted in Table 3, showing the number of deaths amongst the women of the agricultural class in England, as compared with men, show the malign influences of in-door life, the ratio being 230 women to 205 men; and of the greater mortality of industrial operations, the ratio being 467 to 664, fully illustrates two points, that with the decreased resistance of the system due to industrial pursuits is associated the increased danger due to greater exposure in an atmosphere impure and containing the bacilli of tuberculosis.

"Mager, from Bavarian statistics, estimates the proportion of deaths from phthisis between town and country at 100 to 61." (Hirsch.)

This increase of the phthysical amongst the industrial classes is due not alone to the increased dangers of infection, but to the nature of the occupation. "Dusty trades," says Wynter Blythe, "are specially liable to produce tubercular disease."

Dr. C. Lombard states that of 1,000 deaths of adults from consumption, they could be classed as follows:

|                                               |     |
|-----------------------------------------------|-----|
| Occupations with mineral emanation, . . . . . | 176 |
| Occupations with various dusts, . . . . .     | 145 |
| Sedentary life, . . . . .                     | 140 |
| Workshop, . . . . .                           | 138 |
| Hot and dry air, . . . . .                    | 127 |
| Stooping posture, . . . . .                   | 122 |
| Sudden movements of arms, . . . . .           | 116 |
| Muscular exercise by active life, . . . . .   | 89  |

|                                                          |    |
|----------------------------------------------------------|----|
| Exercise of voice, . . . . .                             | 75 |
| Working in open air, . . . . .                           | 73 |
| Animal emanation, . . . . .                              | 60 |
| Occupations in which watery vapor is breathed, . . . . . | 53 |

Similarly, according to Hirsch, "Smith has ascertained for one thousand persons treated for consumption at the Brompton hospital, that seventy per cent. of them had been in the habit of spending their time in overcrowded, hot and dusty places indoors."

"The same circumstances seem to account for the strikingly common occurrence of phthisis in nunneries, seminaries and such institutions, in evidence whereof a number of observations have been brought forward by Foucault."

Finally, I may state, that in the 1890 report of the inspector of prisons and public charities in Ontario, where the public institutions have by all observers received high commendation, the aggregation of population would seem to produce similar results. Thus, of a total population of insane asylums, amounting to 3,500, having 231 deaths, or sixty-six per 1,000, there were twenty-nine due to phthisis, *i. e.*, forty-four per cent.

Of the total number who died, 153 or sixty-six per cent. had been in the asylum over eighteen months, but no data are given showing what proportions of those who died from phthisis, died within that period.

*Influence of Soil and Climate.*—Says Hirsch *re pneumonia*: "Elevation and configuration, situation on the coast or in the interior, geological character and the like, are all irrelevant in themselves; they have a significance for the pathogenesis only in so far as they determine the climate or the sort of weather in any locality; and it is to be keeping that fact in mind that we may explain the contradictory conclusions which have been arrived at through attending too rigidly to each of the factors named, as if it could be an element in the causation by itself."

This must be similarly stated with regard to their influence on the prevalence of phthisis; while this writer very properly states, after a statistical study of mortality tables of different countries, "that circumstances of climate are on the whole, of merely subordinate importance for the limits of that distribution;" "that the disease occurs *ceterus paribus* in all geographical zones with uniform frequency—that in many regions the number of cases has gone up considerably without any corresponding changes in the climate, but under circumstances of another kind." The mean level of the temperature therefore, has no significance, but it exercises a very decided influence on the course of the disease; for—it runs a much more rapid and pernicious course in tropical countries than in higher latitudes.

Hirsch further affirms that "severe and sudden changes of temperature from day to day have little influence on their own account." "No doubt we have to take into account a fact of importance for the question before us, *viz.*, that all those regions have an absolutely dry climate. The

circumstances are naturally different in the case of a damp climate subject to great variation of the temperature—circumstances which come out most decidedly in equatorial and sub-tropical regions.”

Regarding the influence of ground water upon the prevalence of consumption, while it is very difficult to separate the influence of different factors, still evidence seems sufficient to make us conclude that this is an important factor in the prevalence of consumption.

Bowditch and Buchanan, after extended researches, especially by the latter, have affirmed this influence; and Buchanan remains of the opinion that the exceptions to the rule worked out by him, simply indicate that other ætiological factors besides the influence of soil come into the account under the given circumstances—and seem to neutralize the benefits even of the most favorable condition of soil.

An interesting point seems to have been determined from the Ontario statistics. Thus the health districts 6 and 7 present two very decided differences of physical surface conditions. East district 6 is a central plateau averaging nearly 1,000 feet above the sea, fifty or more miles from the Great Lakes, and having a soil largely gravelly loam; while District 7 is the Niagara peninsula between Lakes Erie and Ontario, about 700 feet above the sea, flat, and having a soil largely of post-glacial clays. The latter has been till recent years very malarious, while the former has practically never had intermittent fevers.

An analysis of the deaths from phthisis, in 1881 gave the following result:

|                       | Percentage of<br>total deaths. | Ratio per 1,000. |
|-----------------------|--------------------------------|------------------|
| District 6, . . . . . | 8.5                            | 1.02             |
| District 7, . . . . . | 12.7                           | 1.64             |

These latter figures are to me very convincing, for the reason that in neither district are there any large towns, while the great bulk of the population in both is engaged in agricultural pursuits, is of the same race, and equally industrious and intelligent.

Setting forth, therefore, in brief form the conclusions based upon this statistical study, I would say—

1. That we must recognize the disease phthisis as beyond question a contagious disease, belonging to the category wherein are placed glanders and leprosy.
2. That assuming this to be true beyond question, the attitude we must as officers of health assume, is to treat it as such, and hence must

examine into what practical measures are to be taken by us for preventing it, and as far as possible, limiting its dissemination from those centers where we find it existing.

3. Arguing by inferences fairly drawn from the numerous statistics already presented, I conclude that we must primarily regard the question of dealing practically with the problem as being one having in an especial sense the qualities of a sanitary crusade.

4. This I infer means that the extinction of phthisis must be looked for by our urging that to deal with it successfully, means as with diphtheria and other diseases of its class, we must endeavor:

(a) To prevent it by removing the causes which promote it.

(b) By so regulating the habits and lives of those affected with it as to prevent them from becoming sources of infection to the healthy.

(c) By the establishment of hospitals and sanatoria, where those infected may have the best possible opportunities of being cured of the disease.

5. Referring to these points in their order I would say as regards the prevention of the disease, we must look to the private or family home of the people.

Here the matters specially to be inquired into are:

1. The removal of dampness both under and around houses, as also the removal of all wood or other organic matter tending to decay or promote fungoid growth.

2. The establishing of efficient and complete plumbing and drainage.

3. The introduction of a pure water supply.

4. The maintenance of purity of the atmosphere of the house by cleanliness, ventilation, and the abundance of sunlight.

5. Proper and equable heating of the living rooms.

6. Attention to the clothing of people whether in the house or out of it. It must be clean, non-conducting and sufficient.

7. The use of nutritious and wholesome food, notably of animal foods, as meat, milk, etc.

6. This means that we must follow the people to:

(1) The school, and see that those desiderata required for the healthy home be had in the school.

(2) The work-room and shop where there is the constant difficulty of over-crowding and uncleanness.

(3) The trade or occupation, notably into our woolen factories where animal materials are handled, to the works where stone-cutting, grinding etc., are carried on; and to those where effluvia and poisonous particles are given off, as in painting, card-glazing, arsenical manufacturing. In this direction indeed our labors must be simply never-ceasing, for the dangers to health are almost as multifarious as the different industries carried on.



(4) The municipal home.

Here we have to deal with the large problem of municipal sanitation. This means, (a) town drainage; (b) town sewerage; (c) town paving; (d) public water works; (e) inspection of filth nuisances; (f) compulsory notification of cases of consumption.

B. This means the removal of consumptives from daily contact with others in public institutions, in work-shops, etc., (g) sanitary and medical education of the people in the homes of such, as to the dangers of personal contact.

The numerous details on this point must naturally be effective to the degree that public sanitation acquires an influence over the person and in the home, and to the degree that the medical profession in their private practice insist on the danger of infection and on the carrying out in the homes of measures to limit this.

The last point is one which specially belongs to our work, viz., the management of municipal hospitals for consumptives, and of sanatoria.

In centuries past lazarettos were numerous in Europe, the confinement of lepers was compulsory, and as a result leprosy can scarcely be said to belong to the category of disease amongst civilized people. There can be no logical reason why municipal and state government aid should not be given to hospitals specially appointed for treating consumption. I do not think that it is either practical or advisable that we should teach or urge that segregation of consumptives in such should be made compulsory, but there are abundant reasons why the existence of such homes where the poorer classes can live and be treated, should everywhere be made available.

The question of how far these views can be carried into practice will depend directly upon the appreciation which the public has of the dangers to be apprehended and of the means to be taken to avoid such.

It is within the scope, but not within the time allotted, to discuss on what basis such can be carried out; but it must suffice to say that curative institutions for consumption must be essentially sanatoria, where equable climate, dry air, pure air, sunlight, out-door work and exercise, gymnastics, and indeed every measure going to increase the resisting power of the system may be had to the greatest extent, which any climate makes possible.

Dr. VAUGHAN said he agreed with the views of Dr. Bryce in nearly every particular. There can be no doubt but that the disease is contagious, and caused by the bacillus tuberculosis; but another element must enter into its production, for without doubt the germs of the disease are widespread, and all of us must at times receive these germs into the system. The germs are most frequently disseminated by means of the sputa, but when the bowels become affected, as they so often do, they are also present in the bowel discharges. State and local boards of health could



accomplish great good by teaching the people the danger connected with the sputa and fecal discharges of consumptives, and how properly to disinfect them. Dr. Vaughan was in favor of consumptive hospitals, and thought thorough isolation of cases would eradicate the disease.

He said that while he recognized a possible danger in tuberculous meat and milk, he was inclined to believe their importance, as a means of spreading the disease, have been greatly overestimated.

Dr. BALCH spoke in favor of all efforts to secure improved sanitation, as a means of combating consumption. It was an undoubted fact that improvements in drainage, and in the ventilation of houses and workshops, had done much to lessen the prevalence of the disease. "Isolation of diseased persons is all very pretty in theory, and would probably be very effective in practice, but it cannot possibly be done." He told of the difficulty he had encountered in causing the removal to hospitals of persons suffering with small-pox, a disease all dreaded, and said this indicated the impracticability of removing consumptives to hospitals. If consumptives were allowed at large, and he saw no way of preventing this he thought it would not be possible to secure disinfection of their sputa.

Dr. SALOMON related a case showing the infectious character of consumption, and the length of time the germs may retain their vitality. The case was related to him by an intelligent man in New Orleans, and while the doctor had not verified the facts, he considered them to be true. A family moved into a house in which there had been a death from consumption. The father occupied the room in which the first case had died. He contracted the disease and died within two years. One of the sons then occupied the room, and he also contracted consumption and died. The room was not used for some time when the second son moved into it, and he also contracted the disease and died. The house was then shut up and offered for sale, but was not disposed of for several years. It was finally sold, and the person who occupied the room in which the other cases occurred, took consumption and died. The room was then thoroughly cleaned and disinfected, the walls scraped, and re-kalsomined, and from that time on no other cases occurred in the house.

Dr. HOMAN said that at a recent visit to a certain health resort he was struck with the number of cases of consumption reported among the residents. The rooms were fitted up with heavy carpets and thick curtains, well calculated to receive and retain the infection of the disease, while disinfection, apparently, was not practiced.

He thought more attention should be given to these matters at the various health resorts. He suggested that consumptives could provide themselves with cloths for receiving sputa, to be burned as soon after using as possible. This is the best means of disposing of infectious sputa; and the people would understand us better if we use the term "destruction of sputa," instead of disinfection.

Dr. BEELER said that consumption was undoubtedly now much more prevalent among the negroes than it was before the war. He attributed this to the over-crowded and illy-ventilated dwellings in which the negroes, especially those living in cities, now dwell. The race is undoubtedly much more susceptible to the disease than formerly, and their habits of life are such that the germs of consumption are indefinitely preserved in their dwellings when once introduced.

Dr. BRYCE, in closing the discussion, said he was pleased to observe that the majority of the conclusions of his paper had been so well sustained by the members of the conference. He did not contemplate the compulsory isolation of consumptives, but to provide hospitals where the poor would gladly go to be treated.

A large number of our work-shops are, from lack of proper ventilation, and other causes, conducive to consumption. Public authorities should be able to regulate such places; and when one of the workmen shows evidence of the disease, in the interest of his fellow-workmen, and for his own sake, he should be removed.

Every city could afford to have at its outskirts a place where such persons could go, and by proper arrangements for treatment, fresh air, and good food, many of these might recover. Physicians, house-holders and employers should be required to report all cases of the disease, and health authorities could then inquire into the sanitary conditions of dwellings and work-shops, which, possibly, were responsible for the disease.

On motion of Dr. Bryce, it was voted to appoint a committee of three to report upon the measures to be recommended for the prevention of consumption.

The chair appointed as members of this committee, Dr. P. H. Bryce, Dr. L. F. Salomon, Dr. Victor C. Vaughan. Dr. Irving A. Watson and Dr. Henry B. Baker were subsequently added to this committee.

The next question taken up was:

**"Would the Appointment of Medical Health Officers for Counties, in Place of Township Officers, and Paid for Devoting their Time Exclusively to Public Health Work, be Advantageous and Practicable?"**

Dr. C. A. Lindsley opened the discussion by reading the following paper:

The first thought this question suggests is, that such a practice would develop a body of sanitarians much superior to any which the township system could possibly produce. In that one result would be found a large measure of advantage.

The administration of public hygiene in these days is not any longer to be successfully undertaken by any good citizen, however much he may be esteemed by his fellow townsmen for his skill as a blacksmith, his honesty as a grocer or banker, his fair mindedness as a justice of the

peace, or even for his judgment as the family doctor. Public hygiene is not now a matter of diet and flannel, and of taking cold.

Public sanitation is taking on a scientific character. Its administration is based on principles, which are more or less settled and fixed. The spread of infectious and contagious diseases is governed by recognized natural laws. It follows, therefore, that the control of those diseases, and the promotion and conservation of the public health, is only to be undertaken successfully with a full knowledge of these laws and of the means suggested by such knowledge.

The above statement reduced to its simplest terms, reads—a health officer requires a special education and training.

The special education and training implies a business, an occupation, a means of earning a living, an object worthy of such preparation.

The ideal health officer is one who has had a good medical education, as an indispensable foundation for his special work. It is almost equally important that he should have the experience of some years of general practice, as a further basis of preparation, because he should be qualified to be an authority in the diagnosis of those contagious and infectious diseases which are dangerous to the public; and also because such experience, and the matured age which it implies, will be an additional influence in winning the confidence of the people whom he serves.

Supplementary to such acquired qualifications he should be a man with the natural gifts of a sound judgment, of high integrity of character, of clear and quick perceptions, and especially of such ready tact in managing affairs as to command the respectful consideration of the public. These are qualifications of no mean order. They represent a higher standard of acquired and natural ability than the average man possesses. But the sort of man so described, corresponds well with the duties and responsibilities of the high functions of his office.

To him are entrusted the highest interests of man in the social state. He is the appointed guardian and custodian of the public health, and in that capacity one of the chief factors in the promotion of public prosperity and general happiness. For there is nothing so disastrous to the public welfare, nothing so productive of personal misery and suffering as disease and death.

A nation whose people are physically feeble, or which is subject to frequent epidemics, cannot be said to be prosperous in any true sense.

Looking then at the question from a stand-point which takes in view the rare qualifications necessary for a good health officer, the preparation for its duties, and the magnitude and importance of the interests involved, it seems self-evident that it is for the best public good, that the true health officer should find full occupation in the exercise of his official functions; that one qualified as he should be for such high and grave responsibilities should not have his attention diverted from

his serious obligations to the public by being obliged to earn a subsistence in other pursuits.

It seems right and fitting that the man who has been educated and trained for the office should be utilized to the best advantage in the public interest.

Thus the question presents itself to my mind in a speculative way.

It remains to notice the practical application of these reflections.

I assume that in the interests of the public health, a health officer should be nothing else in a business or professional way.

All experience teaches that it is incompatible with the public interest that he should be a practitioner of medicine; or else, that it is incompatible with his own interest that he should be a health officer in the same community in which he practices.

A long experience in the administration of public hygiene has impressed me with the immovable conviction that a health officer who is never criticised and found fault with, who makes no enemies, who is not heartily cursed and sworn at by his profane neighbors, is of no practical use as a health officer. And on the other hand, a health officer who is faithful to his public duties, impartial and resolute in his official acts, will gradually, steadily and surely surrender a large share of his patients to the care of his professional competitors.

The two pursuits cannot be harmoniously joined in the same town.

Here, then, is a serious practical difficulty with town health officers. In the first place, every town does not possess an available and competent man. He should be chosen always from the medical profession; no others are fully qualified for the office. But if it be attempted to unite in one person the special duties of medical practitioner and health officer, it soon inevitably happens that there is a conflict between public duty and personal interest, and one must be betrayed or the other will surely suffer.

The wealthy landlord will not meekly receive an order from his family physician to overhaul the plumbing in his tenement houses, to drain the cellars, to remove offensive cesspools, etc., etc., and so make the dwellings of his tenants safer habitations. After receiving such orders that wealthy landlord will call upon Dr. Smith to attend his family, or perhaps Dr. Health Officer foreseeing that result, will prudently omit to send the order and the tenants will continue to endure their wrongs, because it is not the personal interest of the only party who can protect them to do so.

But under the town system that combination of the general practitioner and town health officer is the only practicable method.

The town is not only too narrow a field for a man of the required capacity, but it is also too limited for the best use of such service and for the best results.

Public hygiene deals not alone with local conditions. It has to do



with the welfare of populations, settled over wide areas of territory, and under such varying conditions, that the common good of the whole can not be attained without a comprehensive acquaintance with the mutual relations and interest which the separate towns or communities within those areas may bear to each other.

There are undertakings essential to the promotion of the general public health which require concert of action on the part of several more or less separated communities. It is hard to believe that the wisest measures will be proposed by health officers whose official duties are limited to the narrow confines of their own towns, and whose conceptions of such duties are generally even more limited. It is not reasonable to expect that men whose services to the public in this line are usually gratuitous, or very badly paid, will or can give such studious and careful attention to the sanitary wants not only of their own towns, but of their sanitary relations to other towns, as to be competent and wise counselors for the best good of the whole. On the other hand, it often happens that a town board of health, seeking only the selfish interests of its own citizens, and regardless of others, proceeds to do things which are directly injurious to the health and welfare of adjoining towns.

From the nature of the existing facts, and from a knowledge of the principles and laws which should govern in the general administration of public hygiene, it is self-evident that the greatest good to the greatest number will never be realized from separate, unsystematized and independent town boards of health. Town boards and town officials have their uses and proper functions, which are of great value, and in any plan of operations will be found to be essential to the best success. But the work of town boards needs direction and unification.

Wherever the common interest of several towns are involved, that interest will be best subserved, if the efforts undertaken be under the direction of one mind which has intelligent and comprehensive knowledge of their mutual relations and needs.

The general must command the operations of the army. The colonels and majors, the captains and lieutenants, must act in concert to accomplish his plans, or the army becomes a mob.

It may be urged in this connection that the state boards of health should be the directing power, the commanding general. That, I believe, is true. Although they are not all constituted with such powers. Several of them are like that of Connecticut being only an advisory body and having no mandatory powers at all. But even if the state board is authorized to be commander-in-chief, there is a long space between the state board and each little town board. There is no possibility of bringing them into such close relations, that its authority can be exercised in the most practical and useful way. It requires the intermediate grades of officials to make a useful connection between them. And here the county health officers would form the connecting link. The territory



under the jurisdiction of the county health officer would not be so extensive that he could not, in a reasonable time, become personally acquainted with its topography in matters affecting health. He could, in many instances, by personal investigation, discover and expose the origin of primary cases of communicable diseases, and by such forcible illustration persuade and instruct the public mind. His practical experience would be of great value in arresting and controlling epidemics, if they occurred, but of still greater value in preventing them.

The time has fully arrived when communities and populations should accept the fact that the proper protection and care of the public health is a most important public duty. That its due performance is so dependent upon a scientific knowledge of methods, that it can only be successfully accomplished by trained and qualified officials and that there is great economy in providing for this service in the best and most efficient manner.

Another and great advantage which would be difficult to estimate, because it is one of growth and development and would be enhanced with every year's experience, is that which would come to the state from possessing a body of educated sanitarians, equal in number to its county divisions, and each familiar with the hygienic conditions and sanitary needs of his own jurisdiction.

Such men, selected for their special fitness, holding their office by appointment, and not subject to the caprice of popular elections, but confident of their position, unless by removal for cause, devoting their time and best energies to their duties, would form a bureau of information which might be of the highest benefit to the state board, and through it, to the people's health.

If now we review the points which have been presented, to-wit: The nature of the work to be done, the qualifications required of those who do it, the impracticability of associating it with other pursuits depending upon public patronage, the hindrances and difficulties resulting from limiting independent sanitary jurisdictions within town boundaries, and the positive advantages of broader territorial supervision, and finally the immeasurable benefit which such a body of educated sanitarians, devoted to their work and familiar with every portion of the state could confer upon it, leaves no doubt in the mind of the speaker that the question should be answered in the affirmative.

The paper was discussed by Drs. Balch, Cochran, Chancellor and others.  
Adjourned to 3:30 p. m.

## THIRD SESSION.

The committee on the prevention of consumption was requested to present a preliminary report at the night session, the completed report to be made at the next meeting of the conference.

The question proposed by the Provincial Board of Health of Ontario,--

"The advantages of the organization of rivers conservancy commissions, composed of state and municipal health boards, for the protection of streams against deforesting and pollution at their sources and along their courses"--

Was taken up for discussion.

Dr. Salomon, of Louisiana, in opening the discussion, read the following paper:

*Mr. President and gentlemen:* In the opening of the discussion proposed by the Province of Ontario, it is not my intention to occupy your time with an array of statistics and statement of facts with which you are all familiar.

The question submitted permits of division into two heads for discussion, each, however, somewhat dependent upon the other.

The question as to the deforesting of rivers along their courses was met to a large extent by the discussions before this conference at its last meeting, and in regard to the views then expressed and the resolution adopted by the conference, I have little further to add than to say that by the preservation of the forests along water courses, thus securing a slower percolation and filtration through the soil, the pollution of streams may be and undoubtedly is, to a large extent prevented.

Streams near their origins, as a rule, furnish good sources of water supply, but the further away we get from the springs and mountain streams which furnish the initial supply, the less fit do we find the water for drinking purposes.

Without entering into details it will be sufficient to say in regard to the first division of the question that the deforesting of lands adjacent to streams, which permits of a more rapid surface drainage of rain waters directly into such streams, necessarily implies the carrying into them of the organic matters always to be found in regions in which the ground is under cultivation, more particularly so in regard to manured lands and other attendant conditions of the soil which it is unnecessary to enumerate.

As to the consequent floods from deforestry, nothing need be said in addition to what is already a too familiar fact.

It is however, with the pollution of streams through other than

natural causes that we are most concerned, and each succeeding year is adding and will continue to add to the evil, and the consequent difficulty of providing a remedy therefor.

Sewerage, and the discharge of refuse of all kinds into streams and rivers from the towns along their banks, is the most potent factor in the pollution of water courses, and following this, the discharge from factories, often of such a nature as to be destructive to all animal life for miles from the points of discharge.

Dilution by large supply of water in the larger streams may and probably does to some extent mitigate the evil, but we must bear in mind that the smaller streams are not capable of this method of self-purification, owing to limited dilution of the contaminating matters, and in the case of the larger streams it is found that the towns along their courses are so numerous that the continual succession of sources of pollution allows small chance of purification through dilution or oxidation. Organic and inorganic matters in a state of solution or suspension are thus being constantly added to streams already charged with the same matters, often in a state of putrescence, and with each succeeding town along a water course the evil is multiplied, and the danger from water-pollution keeps constantly increasing in relative ratio to the places of contamination, the next lower town to a manufacturing city being subjected to all the evils while it may itself be putting forth every effort to keep pure the stream from which its water supply is derived.

Infusoria and other animalculæ may in a large degree aid in purifying the water in such streams, but we are not certain as to the extent of such purification, and should not depend upon these natural agencies alone to accomplish the work; besides, it is very questionable as to the work in this direction that may be thus accomplished, when it is remembered that repeated discharges of sewage and kindred matters will destroy these purifying agents, with the accompanying inevitable result of decomposition and the production of offensive gases.

Sewage, as is well known, often contains the specific poisons of disease, and numerous instances are on record in which towns and cities along water-courses have been afflicted with disease thus brought down to them from adjacent towns.

It would only be trying your patience and occupying the valuable time of the conference to elaborate upon this subject with which all sanitarians are familiar, and to which I can add nothing new, and in regard to which facts have been so often repeated.

The question before us simply resolves itself into what is best to be done to stop the constantly increasing evil.

I am therefore pleased that the subject has been presented in the way it has by the Province of Ontario, because I believe that in the organization of conservancy commissions as outlined in the question, a prac-

tical solution of the question is foreshadowed, and that at the least much good can be accomplished.

Legislation without co-operation would be futile, for while one state might make and enforce laws to prevent the pollution of streams within its own territory, its laws would accomplish little good unless contiguous states should do likewise; and I believe that through the co-operative action of state and municipal boards of health the proper legislation may be secured in all states and municipalities, and with united action the good work be carried on.

The importance of this much needed legislation has always engaged the attention of sanitarians, and it may be emphasized by recalling that the first sanitary act upon the English statute books is an act passed in 1388, which act prohibited the pollution of streams and provided a penalty for its violation.

If then such an act was deemed necessary at a time when the needs of sanitation were little understood, and when the population was very sparse, and manufacturing industries so feebly developed, how much more urgent is the need now for such legislation when our cities and towns are filled with factories discharging their refuse into the rivers, and the teeming thousands of inhabitants along their courses are constantly adding to their pollution and rendering them unfit for drinkable or other purposes—not only offending the senses, but producing disease and death through the ever-continuing contamination.

True, the interests involved are such that the question of prevention at this day is one of immense magnitude, surrounded with many obstacles, and perhaps difficult of accomplishment. No legislation, as yet, has been able to secure the much desired end, but I am of the opinion that with concerted action on the part of health boards, and the securing of local regulations rather than general legislation upon this subject, much can be accomplished; and with each local authority, under the guidance of commissions as contemplated, supervising the streams over which it has jurisdiction, their pollution can be largely controlled or altogether terminated.

Such action, however, necessarily requires concerted and uniform methods of procedure, and it is probably through commissions composed of health officials of contiguous states that the work can be best accomplished. Therefore, Mr. President, I beg to submit the following resolutions:

*Resolved*, That it is the sense of this conference that the pollution of streams is attaining such magnitude that early action should be taken by state and local boards of health looking to its prevention.

*Resolved*, That a committee of three be appointed to consider the best means of securing the formation of rivers conservancy commissions, composed of state and local boards of health, and to recommend such legislation as may be necessary to secure the desired result.



*Resolved*, That said committee report at the next meeting of this conference.

Dr. Chancellor said there was great need of state organization, or national aid in preventing the pollution of streams. Rivers in many instances formed the boundaries of states, in which case it was impossible to protect the streams without state co-operation. The Potomac river was given as an illustration. The laws of Maryland for protecting streams are fairly satisfactory; but he had recently endeavored, unsuccessfully, to secure the aid of West Virginia in preventing the pollution of the Potomac river. He said that Cumberland, Md., had been suffering with an epidemic of typhoid fever for the past two years, some six hundred cases having occurred. In looking for the cause of the epidemic it was apparently traceable to the water supply taken from the Potomac, which was polluted with the sewage from Keyser, W. Va., where typhoid fever was prevailing. National aid would probably be needed to control such cases.

Dr. Watson supported Dr. Chancellor's remarks. He said Massachusetts, which has the most comprehensive laws, and a special board to protect its streams, was suffering greatly from the pollution of the Merrimac river by cities in New Hampshire. It was simply impossible for the present to prevent the large cities along the Merrimac from emptying their sewage into it; it would cost millions of dollars to dispose of their sewage otherwise.

Dr. Metcalf, of Indiana, said they were having trouble in their state from the pollution of streams by the waste from straw-board works. One of the largest works in the United States was only about twenty miles from Indianapolis, and this question of pollution of rivers would soon have to be met in their state.

Dr. Reeve said the pollution of streams to some extent was unavoidable, and a question the conference should consider was whether it was possible, by filtration or otherwise, to so purify a polluted water that it could be safely used for domestic purposes.

Dr. Reynolds thought it would be difficult to secure the co-operation of states needed in many instances to control the pollution of streams, and favored asking for the national law.

Dr. Bryce said in Ontario the question is the protection of one town against another higher up on the same stream. He thought we should settle such state questions before calling on the national government. In most European countries they have compelled cities to respect the rights of their neighbors lower down the stream.

Dr. Lee said that action must begin in the state before it reaches the national government. Philadelphia had the distinction of having the highest typhoid fever death-rate of probably any other American city. They were now having an epidemic of the disease traceable to their water supply. It had been noted that wards supplied with water from storage



basins suffered with the disease much less than those supplied direct. Recently complaint had come to their board of the pollution of streams by salt coming from abandoned wells. The board had made answer that salt was antiseptic, and could not be considered as polluting material. The reply was that the salt in Beaver river interfered with the public water supply for Beaver city, thus compelling them to return to the use of wells, leading to an increase of typhoid fever in their city. The board had introduced a bill in legislature for the prevention of the pollution of streams. The bill, by implication, included salt. The bill, however, was killed by amendments, and now only excludes wastes from slaughter-houses, dead animals, etc., from streams.

Dr. C. A. Lindsley said they were urging upon towns the necessity of disposing of their sewage in some other manner than by emptying it into streams—such as broad irrigation, intermittent filtration, etc. Their board had been engaged for some time in investigating the pollution of the streams of Connecticut. In only one instance had legislature forbidden the emptying of sewage into streams; this was at Meriden.

Dr. Reeve presented the following as supplemental to the resolution:

*Resolved*, That this committee be requested to consider and report upon the sanitary value, especially to municipalities, of the purification of water in polluted streams, either by the distance which such polluted water has traveled, or by means of filters or storage beds, or by any other artificial methods.

This was accepted by Dr. Salomon, and the resolution was adopted.

Dr. Watson called attention to the work the Massachusetts Board of Health was doing in this direction, as set forth in their last report on water supplies; also to the experiments in sewage filtration, which for the first time definitely settled important questions relating to water filtration and sewage disposal.

The president said that he would announce the committee called for in the resolution at the next session.

Dr. Lee said that a bill was then pending in the legislature of his state, relating to water pollution, and moved that the secretary be instructed to forward a copy of the resolution to the President of the Senate and Chairman of the House of Representatives of Pennsylvania.

The motion was seconded and carried.

The question proposed by Michigan—

“What change, if any, should be made in the present plan for providing a programme for meetings of the conference?”

Was taken up for discussion.

Dr. McCormack said there had always been difficulty in arranging a programme for meetings of the conference, due to some extent to the neglect of the various secretaries of state boards of health to send questions for discussion.

It had suggested itself that it would be well to have the programme

mapped out on the first day of the meeting for the next succeeding meeting. This might be done by a committee whose report could be acted upon by the conference.

Dr. Cochran thinks Dr. McCormack's method not a good one. If a committee were appointed at all, he would simply have it act on the questions proposed by the various states.

Dr. C. A. Lindsley said he favored the plan proposed by Dr. McCormack. This committee could receive questions from any state and decide upon their appropriateness for discussion by the conference. He knew, under the present plan, that it was almost impossible to satisfactorily arrange a programme.

While on the floor he took occasion to say that he thought the conference was now in a position to stand alone, and need not hold its meetings in connection with any other body. He was opposed to calling meetings on Saturday, as it tended to lessen the attendance.

Dr. Bryce thought the president and secretary should fix the time of meeting, and that the secretary should ask for propositions for discussion six months before the time of meeting. If the programme was not completed within three months of time, the president and secretary should fill it.

Dr. Olliphant suggested that delegates could submit questions a year in advance.

The president suggested that the question should go over for another year.

A motion to table the question was made by Dr. Lee.

Dr. Cochran said we are running too much into committee work. The usefulness of our organization depends upon its simplicity and flexibility; without care we will be getting reports too bulky to publish. There is no necessity to publish mere compilations. What we want is the benefit of each individual's work and experience. What he *knows*, and knows so well that he can come here and talk on the subject without cramming for the discussion.

The motion to table the question proposed by Michigan was put and carried.

Dr. Olliphant extended a cordial invitation for the conference to hold its next meeting in New Orleans.

The secretary made a statement of the financial condition of the conference.

On motion of Dr. Salomon it was voted to assess each state and provincial board of health ten dollars, to be forwarded to the treasurer.

The president announced that the election of officers, and a paper by Dr. Vaughan, would be the order of business for the evening session.

Adjourned to 8 p. m.

FOURTH SESSION.

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THE PRESIDENT. I would suggest that the conference should now dispose of the question of time and place for its next meeting.

Dr. Metcalf moved that the next meeting be held in Washington.

Dr. Watson offered as a substitute that it be held in New Orleans, on the third Tuesday in March, 1892.

Dr. Metcalf invited the conference to meet in Indianapolis.

Dr. Watson withdrew his motion, and a motion by Dr. Reeve to allow the officers of the conference to select a time and place for next meeting prevailed.

Dr. Bryce moved to proceed to the election of officers. Carried.

Dr. Metcalf nominated Dr. J. N. McCormack for president, and moved that the secretary be instructed to cast a ballot for the conference for Dr. McCormack. Carried.

The secretary reported the ballot cast, and Dr. McCormack elected president.

On motion, Dr. C. O. Probst was elected secretary by acclamation.

On motion, Dr. Henry B. Baker was elected treasurer by acclamation.

Dr. Vaughan, of Michigan, gave an entertaining talk on "What recent developments have been made in laboratory work of practical value to health boards."

Dr. Vaughan said if a health officer wants a sample of water examined he sends him from the laboratory a sterilized bottle. Determinations hardness, ammonias, nitrates, nitrites and chlorides are made. Plate cultures are also made. At first he endeavored to study each germ present, but found that this took too long—weeks and months. Now, when the water comes in he immediately makes a plate culture and inoculates a tube of beef tea with a drop of the water. In twenty-four hours he injects some of the beef tea into the abdominal cavity of a white rat. If toxicogenic germs are present, the rat will likely die in twelve to twenty-four hours. Cultures are then made of the spleen, liver and kidney of the rat, and compared with the plate cultures of the water. Corresponding germs are given further study. In this manner he was able to make a report on the water within seventy-two hours. It was not altogether satisfactory, but more so than chemical analysis. He could not say that the germs which killed his rats would kill man, but people will not want to drink water that will kill rats. Rats are hard to kill, and the ordinary water germs will not do it. One hundred and nineteen official reports have been made so far, and in thirty-two instances toxicogenic germs have been found. They are usually found in water which has apparently caused typhoid fever. Duluth has just had about 1,500 cases of typhoid fever. We found a sewer within 500 feet of the

intake pipe of their water works. An examination of their drinking water showed it to contain poisonous germs. Dr. Vaughan said he had also been working on poisonous cheese. He had not in three years found cheese containing tyrotoxicon. Many contained a poison which kills cats, but has no effect on man. Public sentiment, he said, was in favor of the laboratory.

Dr. Bryce stated that they had secured some funds for laboratory work. Hydrophobia in the province last summer had created a sentiment in favor of such work. He had learned of a case where a dog, suffering with hydrophobia, had bitten some cows and some pigs, and finally his master. The animals showed signs of paralysis of the muscles of the pharynx and larynx. He secured the head of a pig that was bitten, and endeavored to inoculate rabbits with the cord. He had failed, producing only septicæmia. The same experience was repeated with the head of one of the cows.

They had lately had an outbreak in hogs of a disease attended with gangrene in the joint just above the hoof. The disease was communicable and acted somewhat like charbon. They had found what seemed to be the germ of the disease. He said they would try Dr. Vaughan's method of water analysis.

Dr. Vaughan, in answer to a question, said he did not believe that typhoid fever only comes from a pre-existing case of the same disease. He thought water contaminated with the excretions of healthy persons may cause typhoid fever. He said sewage may flow long distances in streams without mixing with the stream. Little cities ten miles below Detroit have had typhoid fever, which he attributed to pollution of the water supply by sewage of Detroit. Dr. Vaughan said he thought we had many kinds of typhoid fever due to different germs. He had failed to find Eberth's germ in water that had caused typhoid. He said he did believe that one case of typhoid fever will produce another, but not that every case must have a preceding case. He considered it a dangerous theory to teach that water must be specially contaminated to produce typhoid fever. We should teach that filth in itself is dangerous.

The committee on consumption presented the following preliminary report:

*To the President and Members of the Conference of State Boards:*

GENTLEMEN: Your committee begs leave to report the following resolutions:

1. That it is the opinion of this conference that tuberculosis is a zymotic disease; that its germs are developed within the blood and tissues of man and various animals, and that these germs are capable of an existence external to the body for a number of months, especially in dried sputum, and in places where least exposed to the free action of the atmosphere and sunlight.



2. That the germs of tuberculosis are conveyed in various ways to persons and animals, the principal media of these being:

(a) Dust containing dried sputum.

(b) Food, either contaminated with infected particles, or the flesh of tuberculous animals.

(c) Milk from phthisical mothers and tuberculous cows.

3. That unsanitary conditions are the prime factors tending to the development and dissemination of the disease, such as:

(a) House and soil dampness.

(b) Lack of sunlight and bad ventilation.

(c) Bad plumbing and house drainage.

(d) Overcrowding in living rooms, in schools, in workshops, in public institutions, etc.

4. That the diseases undoubtedly disseminated through the neglect to destroy or disinfect the sputa of the phthisical, distributed as this infectious matter is.

(a) On infected linen (dangerous to washerwomen), clothing, carpets, etc.

(b) On the floors and walls of houses, workshops, hospitals and hotels, especially of health resorts.

5. That to limit the spread of tuberculosis it is necessary that notification by physicians and householders of its existence be made compulsory, thereby enabling health authorities to examine into the sanitary surroundings of those affected, and to make provision for the adoption of the necessary precautions against infection to the healthy.

6. That municipal inspection of dressed meat and of dairy cattle be systematically carried out, and that the notification of the health authorities by owners of infected animals be made compulsory.

7. That municipal and state governments ought to aid in the work of limiting the disease by the establishment of institutions especially designed for the reception and treatment of the phthisical, and so situated that while minimizing the danger to the general community, they may likewise supply out-door work and exercise, suited to the condition of different patients.

PETER H. BRYCE, M. D., *Chairman.*

LUCIEN F. SALOMON, M. D.

V. C. VAUGHAN, M. D.

The president announced that the committee on the pollution of rivers, would be constituted as follows: Dr. L. F. Salomon, of Louisiana; Dr. C. A. Lindsley, of Connecticut; Dr. C. N. Metcalf, of Indiana; Dr. John H. Rauch, of Illinois, and Dr. Henry P. Walcott, of Massachusetts.

Dr. Bryce, as a delegate of the conference to the International Congress of Forestry, held at Montreal, Quebec, submitted a report.

It was voted to continue all standing committees, and request them to report at the next meeting.

Adjourned *sine die*.

22-16-91.



## 2. REPORT OF THE SECRETARY AS DELEGATE TO THE MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, 1890.

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Programme.  
Officers of the Association.  
Vigilance against Cholera.  
Visit to Quarantine.  
Hygienic value of Habits of Living.  
Imported Diseases.  
Vaccination.  
Tidal Drain System of Charleston.  
Garbage and Refuse.  
Maritime Sanitation.  
Centennial of Vaccination.  
Diphtheria.  
Tuberculosis.  
Report of Committee on Sanitary and Medical Service on Emigrant Ships.

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In accordance with his appointment the secretary attended the meeting of the American Public Health Association at Charleston, S. C., December 16, 17, 18, 19, 1890.

The subjects considered by the association were as follows:

1. "Sanitary Construction in House Architecture."
  - (a) "Heating."
  - (b) "Lighting."
  - (c) "Drainage."
  - (d) "Ventilation."
2. "Sewage Disposal."
3. "Maritime Sanitation at Ports of Arrival."
4. "The Prevention and Restriction of Tuberculosis."
5. "Isolation Hospitals for Infectious and Contagious Diseases."
6. "Establishments in Favorable Climates for Persons having Tubercular Predispositions."
  - (a) "Schools for Children and Adolescents."
  - (b) "Sanatoria."
  - (c) "Permanent Residence."
7. "Papers on Miscellaneous Sanitary and Hygienic Subjects."

The officers were: President, Dr. Henry B. Baker, Lansing, Mich.; First Vice President, Dr. Frederick Montizambert, Quebec, Canada; Second Vice President, Dr. Joseph H. Raymond, Brooklyn, N. Y.; Secretary, Dr. Irving A. Watson, Concord, N. H.; Treasurer, Dr. J. Berrien Lindsley, Nashville, Tenn.

Dr. Plunkett introduced a resolution which intended to impress upon the quarantine officers of the country the necessity of increased vigi-

lance against cholera, which is said to be now raging in foreign ports. Referred to the executive committee.

Dr. Lee, of Philadelphia, introduced a resolution which requested quarantine officers to be careful and, if possible, restrict the importation of rags from foreign ports. Referred to the executive committee.

Upon motion a standing committee on car sanitation was appointed, and Dr. Daniels of Wisconsin was named as chairman of the committee.

An opportunity was afforded the members of the association to visit the quarantine station of the port on the eastern end of James island, near the site of Fort Johnson. A very complete plant, closely modeled on the Holt system at New Orleans, has just been introduced at this station, a description of which is submitted with illustrations, and the recommendation that it be published as a portion of the annual report if the plates can be obtained from the Charleston board of health.

The session was opened by the reading of the excellent paper of Dr. James F. Hibberd, of Richmond, Indiana, on the hygienic value of rational irregularities in the habits of living. Dr. Hibberd dealt with this important question in an extremely practical and intelligible manner.

The next essay was on the relation of land monopoly to population health, by George Homan, M. D., secretary of State Board of Health of Missouri, St. Louis, Mo.

The authors of the following papers not being present, upon motion their reading was postponed until next day:

Paper on climate in phthisis, by W. H. Geddings, M. D., of Aiken, S. C.

Paper on house drainage, by Albert L. Webster, sanitary engineer, New York.

Paper on trap siphonage, by Prof. James E. Denton, Stevens Institute of Technology, Hoboken, N. J.

Report from the State Board of Health, of South Carolina, by J. R. Bratton, M. D., president of the state board of health.

Among the important reports of committees were those on the sanitation of foreign ships, by Dr. Durgin, of Boston, and on diphtheria, by G. C. Ashman, of Cleveland, Ohio.

#### IMPORTED DISEASES.

Dr. Durgin, of Boston, of the committee on sanitation of foreign ships, submitted an excellent report. The fact that during the past ten years over 5,000,000 emigrants came to America ought to give the question a considerable interest. Statistics showed that of the population of 1880 there was one pauper to every 985 native-born Americans, and one pauper to every 285 foreign-born inhabitants.

The ventilation of emigrant vessels, he said, was very defective. The unclean habits of most emigrants, the poor accommodations and

miserable ventilation of our steamers are very likely to produce disease. There is a great lack of necessary information on hygiene among the officers of vessels. The law giving the master entire control of the vessel is not desirable. The health officer should have more authority. Better protection to the country requires a revision of the present laws. There should be requirements that all persons leaving or coming into the country should be subject to a thorough medical examination, and no one suffering with an incurable or contagious disease should be permitted to come into the country.

Vaccination should be required.

Proper ventilation of emigrant vessels should be required.

Every vessel should have one credited health officer to every 600 passengers or less.

The medical inspector should be required to inspect vessel daily and report to master.

The master should be required to answer all demands of the vessel's health officer.

#### VACCINATION.

The paper of Dr. Montizambert was a clear and practical demand for the enforcement of laws requiring vaccination of all persons coming into the country. The nation demanded such protection and he hoped that the association would do its best to secure the necessary legislation. Small-pox, wherever found in America, had its origin on foreign vessels. It is never native born. There was absolute need for imperative laws upon vaccination, and he was very sorry that America did not have any laws requiring general vaccination for all immigrants.

The report of the committee and the paper of Dr. Montizambert will be a great acquisition to the matter to be used in urging strict enforcement of quarantine laws and the passage of stricter laws.

The two papers will be published and copies sent to the members of the American and Mexican congresses and the Canadian parliament.

#### THE TIDAL DRAIN SYSTEM OF CHARLESTON.

Mr. L. J. Barbot presented a most interesting and valuable paper on the tidal drain system of Charleston.

Dr. Conn, of New Hampshire, submitted an elaborate report upon the disposal of garbage and refuse. The report was read by title and will be published and distributed. The work of the committee consists of an examination of the processes now in use for the disposal of garbage, and the best methods for its destruction.

Dr. Lindsley, of Iowa, moved that the committee on vital statistics be continued. Carried.

Dr. Gihon, of the United States navy, who was one of the delegates to the international convention in Berlin, submitted a brief verbal report.

## MARITIME SANITATION.

The last paper read before the departure for the quarantine station at Fort Johnson was maritime sanitation at port of arrival, by H. B. Horlbeck, M. D., quarantine officer of the port of Charleston. The paper was one of the most admirable presented to the convention. It was clear, concise and well framed, and gave to the members of the association a full insight into the workings of the station at Fort Johnson.

He gave an elaborate and detailed account of the quarantine laws of Charleston, and showed how rigorously the health of Charleston was guarded in colonial days against the importation of disease. Yellow fever, its origin and how it became prevalent in Charleston, were thoroughly discussed by Dr. Horlbeck. He gave a graphic account of the plagues of Charleston and the Mississippi valley. The plague of 1864 was introduced by intercourse with the West Indies at that time.

Dr. Horlbeck gave a complete and detailed account of the workings of the quarantine station over which he has direction.

The more important resolutions were adopted as follows:

By Dr. WOOD. That a committee of this association be appointed to confer with a similar committee of the American Medical Association to observe in some appropriate way the centennial of the discovery of vaccination.

By Dr. ROHE. That the report of the committee on the cause and prevention of diphtheria be printed in pamphlet form as soon as practicable and that copies be furnished to each state board of health.

Dr. GIBON. That a standing committee of five members be appointed by the president to formulate practical prophylactic measures for the prevention of the spread of tuberculosis, especially looking to the protection of the healthy members of the community from tuberculosis infection.

The report of the committee on sanitary and medical service on emigrant ships is appended.



## Report of Committee on Sanitary and Medical Service on Emigrant Ships.

By S. H. DURGIN, M. D., *Chairman of the Committee, Boston, Mass.*

The immigration of people from foreign countries to the United States during the last ten years has been much larger than for any similar period in the history of our country, the number landed for the ten years ending June 30, 1889, exclusive of those from the British North American possessions and Mexico, being 5,248,568 as against 2,742,137 for the previous ten years. The effect of this rapid increase of our foreign population upon the industrial and sanitary interests of our country is a problem which has already excited discussion in the halls of congress; while the importation of physical and mental ailments, frequently aggravated or induced by unnatural and unsanitary conditions on shipboard, has been recognized and deplored by medical and sanitary organizations. In considering this question, we are led to inquire, first, What proportion or number of these people are landed in this country in an unsound mental or physical condition, more or less dangerous to the communities in which they move, or who fall, sooner or later, upon the support of our charitable or correctional institutions? There are no statistical data, to our knowledge, by which we could make definite statements upon these points, but the observations of medical officers long in the service of immigrant inspection at our ports of entry, and those doing medical service in our departments for public charity and correction, warrant us in saying that the numbers are sufficiently large to attract serious attention, and that they point to a very disproportionate number of diseased and dependent persons among the foreign as compared with the native population. According to the statements of trustworthy dermatologists, supported by sufficient data, many of the skin diseases, particularly scabies, tinea favosa, leprosy, prurigo, lupus and melanosis are rarely found in this country except as direct or indirect importations from foreign countries, and their increase among us is mainly if not wholly due to this cause. Dr. James C. White, of Boston, says: "Unless some more stringent laws are made to keep out of our country the pauper and dirty populations of Europe, the direct importation of the diseases we have been considering (referred to above), and those which may arise as well as from the filthy habits they bring with them and transmit to their children, must follow with increasing magnitude."

In 1880 our native-born population numbered 43,475,840, and our foreign-born 6,679,943. The native-born paupers numbered 44,106, and the foreign-born paupers numbered 22,991, or one pauper in 985 of the native-born and one in 290 of the foreign-born—a proportion of three and one-half times as large in the latter as in the former; and yet it



it will be found, when the census data for 1890 are completed, that the large proportion of paupers in our foreign population of 1880 will be considerably increased on account of the poorer quality of immigrants which we have received from the poorest parts of Europe in the last ten years. This large influx of foreign people, the importation and increase of infectious and exotic diseases, and the consequent vast increase of our dependent class, lead us to the second and principal part of our inquiry.

We find that the medical inspection of emigrants at the foreign ports of departure, for the ostensible purpose of excluding unfit persons from emigration, with but two unimportant exceptions, is done by officers in the interest and employment of the country which is being abandoned by the emigrant, and not by an officer in the interest of the country where the emigrant seeks his new home. A single case, which occurred at Boston quarantine last summer, will serve to illustrate how this inspection service, as now performed in foreign ports, may fail to detect or arrest cases which we are unwilling to receive: It was a middle-aged woman who left her home in Sweden to join her family (who had preceded her) in their new home in America. She passed the medical inspection at Liverpool, and on reaching Boston quarantine placed herself in line with six hundred others for inspection; was easily apprehended as a leper, removed to the hospital, photographed, and after a few days returned to Sweden under authority of act of congress, August 3, 1882. The case was one of tubercular type, far advanced, with ulcerations on limbs and face, and with beginning necrosis of fingers and toes. I pass the photograph for your inspection.

The occasional exposure of passengers to small-pox, shortly before embarking, renders early vaccination, at least before the expiration of the fourth day, extremely important. This act, however, is never performed until after embarkation, and generally too late to prevent an attack of small-pox among the passengers.

The allowance of room for each passenger in the steerage must be regarded as inadequate for the healthful needs of the occupant, even when better means for ventilation are furnished than are now generally found, or which our laws demand.

The means of ventilation as called for, and as generally found, are insufficient, ill-adapted, and for the most part inoperative.

The small amount of fresh air now provided is delivered with a dangerous draft directly upon one or two persons, while the atmosphere of other parts of the same compartment, where ventilation is most needed, remains practically stagnant. An ample supply of fresh air could easily and safely be provided through larger shafts terminating near the floor in the open spaces in the center of the ship between the compartment partitions. From this point the air would pass over the top of the partitions into the spaces occupied by the passengers, be well distributed,

and then exhausted through the iron gutter in the floor at the side of the ship; the iron gutter to be connected with a shaft leading upward in the side of the ship to the floor above, and thence across to the center of the ship terminating above the hurricane deck at a proper distance from the inlet shaft, and provided with an ample exhaust fan at the top to secure the current at all times in the right direction.

The unclean personal habits of the average emigrant, with the unclean and unaired bedding and clothing, added to the ills and confinement incident to a rough passage in these overcrowded and ill-ventilated quarters, are sufficient causes for the sickening odors which have often been described.

The hospitals, when used for ordinary diseases, are fairly well located and arranged, except in the matter of ventilation, but when used for contagious diseases, with their present lack of any means for ventilation, the location is very bad.

The means for ordinary bathing are inadequate, inconvenient, and but little used.

The latrines are generally filthy and oftentimes extremely repulsive for want of necessary care.

The quarters in the forecabin for the crew are well arranged, but lacking in means for ventilation.

One of the most noticeable features met with in the examination of emigrant ships is the general lack of information among the officers as to the location, use, care or existence of any sanitary rules, means or appliances, and the ready excuses given for their absence or poor condition when found.

All matters pertaining to the hygienic conditions of the ship are by law left in the hands of the master. This is wrong in principle, and a failure in practice. The master of the vessel is required to make, post and enforce sanitary rules but he has neither the training nor the adaptability for such duties.

The laws concerning all points of sanitary construction and government on shipboard should be explicit, and should be enforced and supplemented by an officer whose education and professional training have qualified him for the work.

It is therefore our judgment that the sanitary care of the vessel belongs wholly to the ship's surgeon, who may reasonably be expected to possess the necessary qualifications. Experience and inquiry have shown that greater care should be used in the selection of the medical officers of the ship, and that such officers should be provided with better rank, pay and assistance, to the end that all parts of the ship and every passenger may have intelligent daily inspections, that the earliest symptoms of disease may be detected and that a wholesome condition of the ship may be preserved at all times.

The most recent laws for the regulation of emigration and emigrant

ships were enacted in 1882, and such parts of these as pertain to the subject under discussion are herewith given.

In the opinion of your committee, the better protection of our country against the importation of contagious and infectious diseases, as well as the sanitary welfare of the emigrant while on shipboard, requires that these laws be revised and extended to meet the present standard views of the sanitarian.

We therefore recommend—

That there should be allowed on all emigrant vessels such clear cubic space to each passenger, and that such means for ventilation be provided in all parts of the vessel used by the passengers, including hospitals, as shall secure to each one at least twelve hundred cubic feet of fresh air per hour continuously.

That there should be provided and carried on every passenger ship bringing immigrants to this country, not less than one graduated and competent medical officer to each six hundred passengers, or part thereof, and it should be the duty of the principal medical officer of the ship to make and enforce regulations concerning the health of the passengers and the sanitary condition of the ship, and to post copies of said regulations and of the United States laws pertaining to emigrant passengers in accessible parts of the ship; that it should be the duty of the medical officer to make daily inspections of all passengers and their quarters, and of all sanitary appliances, note their several conditions, and report the same to the master of the ship each day; and he should make such requisitions for material and aid upon the master of the vessel as he may deem necessary for the promotion of health among the passengers and the cleanliness of the vessel.

That it should be the duty of the master of the vessel to provide all necessary aid to the medical officer in the performance of his duties.

*Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That it shall not be lawful for the master of a steamship or other vessel, whereon emigrant passengers, or passengers other than cabin passengers, have been taken at any port or place in a foreign country or dominion (ports and places in foreign territory contiguous to the United States excepted), to bring such vessel and passengers to any port or place in the United States unless the compartments, spaces and accommodations hereinafter mentioned have been provided, allotted, maintained and used for and by such passengers during the entire voyage; that is to say: In a steamship, the compartments or spaces, unobstructed by cargo, stores or goods, shall be of sufficient dimensions to allow for each and every passenger carried or brought therein, one hundred cubic feet, if the compartment or space is located on the main deck or on the first deck next below the main deck of the vessel, and one hundred and twenty feet for each passenger carried or brought therein if the compartment or space is*



located on the second deck below the main deck of the vessel; and it shall not be lawful to carry or bring passengers on any deck other than the decks above mentioned. And in sailing vessels such passengers shall be carried or brought only on the deck (not being an orlop deck) that is next below the main deck of the vessel, or in a poop or deck-house constructed on the main deck; and the compartment or space, unobstructed by cargo, stores or goods, shall be of sufficient dimensions to allow one hundred and ten cubic feet for each and every passenger brought therein. And such passengers shall not be carried or brought in any between-decks, nor in any compartment, space, poop or deck house, the height of which from deck to deck is less than six feet. In computing the number of such passengers carried or brought in any vessel, children under one year of age shall not be included, and two children between one and eight years of age shall be counted as one passenger; and any person brought in such vessel who shall have been during the voyage taken from any other vessel wrecked or in distress on the high seas, or have been picked up at sea from any boat, raft or otherwise, shall not be included in such computation. The master of a vessel coming to a port or place in the United States in violation of either of the provisions of this section shall be deemed guilty of a misdemeanor; and if the number of passengers other than cabin passengers, carried or brought in the vessel or in any compartment, space, poop or deck-house thereof, is greater than the number allowed to be carried or brought therein, respectively, as hereinbefore prescribed, the said master shall be fined fifty dollars for each and every passenger in excess of the proper number, and may also be imprisoned not exceeding six months.

SECTION 2. That in every such steamship or other vessel there shall be a sufficient number of berths for the proper accommodation, as hereinafter provided, of all such passengers. There shall not be on any deck nor in any compartment or space occupied by such passenger more than two tiers of berths. The berths shall be properly constructed, and be separated from each other by partitions, as berths ordinarily are separated, and each berth shall be at least two feet in width and six feet in length; and the interval between the floor or lowest part of the lower tier of berths and the deck beneath them shall not be less than six inches, nor the interval between each tier of berths, and the interval between the uppermost tier and the deck above it, less than two feet six inches; and each berth shall be occupied by not more than one passenger over eight years of age; but double berths of twice the above mentioned width may be provided, each double berth to be occupied by no more and by none other than two women, or by one woman and two children under the age of eight years, or by husband and wife, or by a man and two of his own children under the age of eight years or, by two men personally acquainted with each other. All the male passengers up-

wards of fourteen years of age, who do not occupy berths with their wives, shall be berthed in the fore part of the vessel, in a compartment divided off from the space or spaces appropriated to the other passengers by a substantial and well secured bulkhead; and unmarried female passengers shall be berthed in a compartment separated from the spaces occupied by other passengers by a substantial and well constructed bulkhead, the opening or communication from which to an adjoining passenger space shall be so constructed that it can be closed and secured. Families, however, shall not be separated except with their consent. Each berth shall be numbered serially, on the outside berth-board, according to the number of passengers that may lawfully occupy the berth; and the berths occupied by such passengers shall not be removed or taken down until the expiration of twelve hours from the time of entry, unless previously inspected within a shorter period. For any violation of either of the provisions of this section the master of the vessel shall be liable to a fine of five dollars for each passenger carried or brought on the vessel.

SECTION 3. That every such steamship or other vessel shall have adequate provision for affording light and air to the passenger decks and to the compartments and spaces occupied by such passengers, and with adequate means and appliances for ventilating the said compartments and spaces. To compartments having sufficient space for fifty or more of such passengers, at least two ventilators, each not less than twelve inches in diameter, shall be provided, one of which ventilators shall be inserted in the forward part of the compartment and the other in the after-part thereof, and shall be so constructed as to ventilate the compartment; and additional ventilators shall be provided for each compartment in the proportion of two ventilators for each additional fifty of such passengers carried or brought in the compartment. All ventilators shall be carried at least six feet above the uppermost deck of the vessel, and shall be of the most approved form and construction. In any steamship, the ventilating apparatus provided, or any method of ventilation adopted thereon, which has been approved by the proper emigration officers at the port or place from which said vessel was cleared, shall be deemed a compliance with the foregoing provisions, and in all vessels carrying or bringing such passengers there shall be properly constructed hatchways over the compartments or spaces occupied by such passengers, which hatchways shall be properly covered with houses or booby hatches, and the combings or sills of which shall rise at least six inches above the deck; and there shall be proper companion-ways or ladders from each hatchway leading to the compartments or spaces occupied by such passengers; and the said companion-ways or ladders shall be securely constructed, and be provided with hand-rails or strong rope, and, when the weather will permit, such passengers shall have the use of each hatchway situated over the compartments or spaces appropriated to their



use; and every vessel carrying or bringing such passengers shall have a properly located and constructed caboose and cooking range, or other cooking apparatus, the dimension and capacity of which shall be sufficient to provide for properly cooking and preparing the food of all such passengers. In every vessel carrying or bringing such passengers there shall be at least two water-closets or privies, and an additional water closet or privy for every one hundred male passengers on board, for the exclusive use of such male passengers, and an additional water-closet or privy for every fifty female passengers on board, for the exclusive use of the female passengers and young children on board. The aforesaid water-closets and privies shall be properly enclosed and located on each side of the vessel, and shall be separated from passengers' spaces by substantial and properly constructed bulkheads or partitions; and the water-closets and privies shall be kept and maintained in a serviceable and cleanly condition throughout the voyage. For any violation of either of the provisions of this section, or for any neglect to conform to the requirements thereof, the master of the vessel shall be liable to a penalty not exceeding two hundred and fifty dollars.

SECTION 4. An allowance of good, wholesome and proper food, with a reasonable quantity of fresh provisions, which food shall be equal in value to one and a half navy rations of the United States, and of fresh water not less than four quarts per day, shall be furnished each of such passengers. Three meals shall be served daily, at regular and stated hours, of which hours sufficient notice shall be given. If any such passengers shall at any time during the voyage be put on short allowance for food and water, the master of the vessel shall pay to each passenger three dollars for each and every day the passenger may have been put on short allowance, except in case of accidents, where the captain is obliged to put the passengers on short allowance. Mothers with infants and young children shall be furnished the necessary quantity of wholesome milk or condensed milk for the sustenance of the latter. Tables and seats shall be provided for the use of the passengers at regular meals. And for every wilful violation of any of the provisions of this section the master of the vessel shall be deemed guilty of a misdemeanor, and shall be fined not more than five hundred dollars and be imprisoned for a term not exceeding six months. The enforcement of this penalty, however, shall not affect the civil responsibility of the master and owners of the vessel to such passengers as may have suffered from any negligence, breach of contract or default on the part of such master and owners.

SECTION 5. That in every such steamship or other vessel there shall be properly built and secured, or divided off from other spaces, two compartments or spaces, to be used exclusively as hospitals for such passengers, one for men and the other for women. The hospitals shall be located in a space not below the deck next below the main deck of

the vessel. The hospital spaces shall in no case be less than in the proportion of eighteen clear superficial feet for every fifty such passengers who are carried or brought on the vessel, and such hospitals shall be supplied with proper beds, bedding and utensils, and be kept so supplied throughout the voyage. And every steamship or other vessel carrying or bringing emigrant passengers, or passengers other than cabin passengers, exceeding fifty in number, shall carry a duly qualified and competent surgeon or medical practitioner, who shall be rated as such in the ship's articles, and who shall be provided with surgical instruments, medical comforts and medicines proper and necessary for diseases and accidents incident to sea voyages, and for the proper medical treatment of such passengers during the voyage, and with such articles of food and nourishment as may be proper and necessary for preserving the health of infants and young children; and the services of such surgeon or medical practitioner shall be promptly given, in any case of sickness or disease, to any of the passengers, or to any infant or young child of any such passengers who may need his services. For a violation of either of the provisions of this section the master of the vessel shall be liable to a penalty not exceeding two hundred and fifty dollars.

SECTION 6. That the master of every such steamship or other vessel is authorized to maintain good discipline and such habits of cleanliness among such passengers as will tend to the preservation and promotion of health, and to that end he shall cause such regulations as he may adopt for such purpose to be posted up on board the vessel, in a place or places accessible to such passengers, and shall keep the same so posted up during the voyage. The said master shall cause the compartments and spaces provided for, or occupied by, such passengers to be kept at all times in a clean and healthy condition, and to be, as often as may be necessary, disinfected with chloride of lime, or by some other equally efficient disinfectant. Whenever the state of the weather will permit, such passengers and their bedding shall be mustered on deck, and a clear and sufficient space on the main or any upper deck of the vessel shall be set apart and so kept for the use and exercise of such passengers during the voyage. For each neglect or violation of any of the provisions of this section, the master of the vessel shall be liable to a penalty not exceeding two hundred and fifty dollars.

SECTION II. That the collector of customs of the collection district within which, or the surveyor of the port at which, any such steamship or other vessel arrives, shall direct an inspector or other officer of the customs to make an examination of the vessel, and to admeasure the compartments or spaces occupied by the emigrant passengers, or passengers other than cabin passengers, during the voyage; and such measurement shall be made in the manner provided by law for admeasuring vessels for tonnage; and to compare the number of such passengers found on board with the list of such passengers furnished by the

master to the customs officer; and the said inspector or other officer shall make a report to the aforesaid collector or surveyor, stating the port of departure, the time of sailing, the length of the voyage, the ventilation, the number of such passengers on board the vessel and their native country, respectively; the cubic quantity of each compartment of space, and the number of berths and passengers in each space; the kind and quality of the food furnished to such passengers on the voyage; the number of deaths, and the age and sex of those who died during the voyage, and of what disease; and in case there was any unusual sickness or mortality during the voyage, to report whether the same was caused by any neglect or violation of the provisions of this act, or by the want of proper care against disease by the master or owners of the vessel; and the said reports shall be forwarded to the Secretary of the Treasury at such times and in such manner as he shall direct.

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#### The Vaccinal Protection of Passengers from Europe.

By F. MONTIZAMBERT, M. D., Edin.; F. R. C. S.; D. C. L.; *Medical Superintendent Canadian Quarantine Service.*

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In considering the subject of the vaccinal protection of passengers from Europe to this continent, one of the first questions that naturally present themselves is, what is the principal object of the quarantine laws and regulations on this subject?

There are no general compulsory vaccination or revaccination laws in America. Under all quarantine regulations the alternative of a quarantine of observation may be chosen. It would seem evident, therefore, that the prevention of the introduction into America of vaccinally unprotected persons (who may contract small-pox after arrival), however desirable it may be in itself, is not the main object of the quarantine laws as to vaccination.

The regulations requiring vaccination, or a quarantine of observation, have evidently for their main object the prevention of the entrance into this country of any vaccinally unprotected person who may have been exposed to the infection of small-pox shortly before sailing, or upon shipboard during the voyage—in other words, who may have small-pox incubating in his system. They are, I presume, founded upon some such considerations as the following:

(a) The period between the contracting of small-pox and the falling ill with the disease—the period of incubation—is, as a rule, about twelve to fourteen days. That is longer by some days than the average steamship voyage from Europe to this country. A passenger may, therefore, take the small-pox at his home, on the continent or in Great Britain, on his way to the port of departure, or whilst there waiting to embark, and yet remain apparently well during the voyage, and when passing at



quarantine, and only fall ill with the developed disease after he has reached his inland destination on this side.

(b) The period of incubation of the protective vaccination is less than that of small-pox. A vaccination usually "takes" on the third or fourth day. By the eighth day the vaccine vesicle is completely developed, with its areola, the "zone of safety."

(c) When this stage of the vaccine vesicle is reached before the actual appearance of the eruption of small-pox, the attack of that disease, otherwise about to disclose itself, may be averted.

(d) Even when this stage of the vaccine vesicle is only reached after the actual appearance of the eruption of small-pox, the attack of that disease may be modified or aborted.

It is evident, therefore, that the earlier we can secure the vaccination of passengers, the more complete will be the protection for them and for this country. Vaccination during the voyage cannot be depended upon to prevent the development of small-pox from reception of its infection shortly before embarkation, unless it can be performed the first day or two after sailing. If postponed by the ship's surgeon on account of other duties, or to allow the passengers to get over their sea-sickness, if only done late in the voyage just to enable the ship's surgeon to make oath truthfully that it has been done, or, still worse, if only done at quarantine at the port of arrival, it may possibly modify the severity of the attack, but it cannot be counted upon to prevent its occurrence.

My experience at the St. Lawrence quarantines has proved the well-nigh invariable usage of the ships' surgeons to be the postponement of the examination, and of such vaccination as they may do, until the vessel is in the comparatively quiet waters of the Gulf; that is to say, until a day or two before the vessel is due at the quarantine inspecting point. The excuse usually given is, that the recovery of the passengers from their sea-sickness had to be awaited. Personal observation has shown me that a very similar usage obtains on some, at least, of the principal steamships running to New York, and I am told by ships' surgeons generally that it is practically the rule for all vessels bringing passengers from Europe to all ports on this side. The experience of Dr. Smith, health officer at the port of New York, seems to be very similar to my own. Thus he writes in one of his reports:

"The success in securing the examination and vaccination of immigrants within the first twenty-four hours after leaving port has not been commensurate with the effort made. The sea-sickness, which very generally prostrates a great portion of the passengers soon after the voyage is commenced, continues several days, making it next to impossible for the surgeon in some cases to give the desired attention to this duty, and in others, and in many instances, affords a good excuse for neglecting it."

The difficulty of examining and vaccinating a number of passengers

suffering from sea-sickness with all its attendant disturbance of mind and body needs only to be mentioned to be believed in; but it can scarcely be even approximately realized without having been experienced. It may be assumed, then, that this cause of the tardy examination makes the carrying out of the vaccinal protection during the first day or two of the voyage practically beyond the power of the ship's surgeon, and, as before stated, when postponed until later, the vaccination cannot be depended upon to prevent the development of small-pox contracted before embarkation. When small-pox occurs during the voyage, and is reported or detected at quarantine, the danger to this country is not really great. The cases of sickness are strained out at quarantine; there is full opportunity for the disinfection of the vessel, clothing, etc., and all persons on board are, at most ports, vaccinated. Under such circumstances the exposure is recent, and the vaccination, even at quarantine, will usually be in time to prevent the spread of the disease. It is, therefore, not so often passengers from such vessels that communicate small-pox to interior communities. A greater source of danger is in those who have been infected at or previous to departure from the port on the other side, and who reach this country and pass the quarantine barriers prior to the development of the disease. And if there be a constant source of a grave danger to the interior communities of this country from the tardy revaccination on shipboard where a time limit for such revaccination is enforced, as in the St. Lawrence, how much greater is the danger from some of the principal United States ports where practically any old vaccination mark is taken as evidence of sufficient protection! Thus of the port of New York, Dr. Smith writes:

"The law in relation to the vaccination of immigrants, which provides that 'those who are insufficiently protected from small-pox by vaccination shall be vaccinated,' leaves so much to the judgment of the surgeon of the steamer, that in some instances the vaccinations are so few that it is of little benefit in preventing the infection and development of the disease when passengers are exposed to the contagion during the voyage. The medical officer not infrequently accepts the slightest evidence of vaccination as a sufficient protection. The German surgeons revaccinate pretty thoroughly, but 'the English surgeons, as a rule, have vaccinated only those who have no evidence of previous protection, or in whom it is very obscure.'"

The period during which a successful vaccination or an attack of small-pox ensures protection from small-pox varies to a certain extent under different circumstances, but no one who has had any experience with the disease will maintain that infant vaccination is a certain protection throughout adult life. In some, it is possible that the regular phenomena of vaccination can be produced but once in a lifetime, but this is never to be depended upon. There can be no doubt that the protective power of vaccination decreases in proportion to the length of time



that has elapsed since its performance; and that, too, without any necessary dependence upon the scar upon the arm, which may be carried unobliterated to the grave, for it has been demonstrated over and over again that the condition of the cicatrices does not furnish reliable evidence as to whether the subject is or is not protected.

In the armies of Europe, where revaccination is now general, the percentage of successful revaccinations has varied from fifty to seventy-five per cent. In the report of the committee to the American Medical Association, 1885, I find the following amongst other conclusions:

That out of any number of adult persons who have good marks of vaccination, forty and one-half per cent. are perfectly protected, while fifty-nine and one-half per cent. are susceptible to varioloid.

That out of any number of adult persons with imperfect marks of vaccination, twenty-three per cent. only are protected, while seventy-seven per cent. are liable to small-pox or varioloid.

Regulations which only require steerage passengers to be vaccinated who are not "sufficiently protected," are manifestly insufficient. Ships' surgeons are prone, as we have seen, to accept the slightest evidence of any vaccination mark as "sufficient protection." In any passenger vessel those without any marks are but as units compared to the hundreds with old marks but almost equally unprotected. At the best these few units may be vaccinated a day or two before the vessel reaches port on this side, and they, and all the unprotected or only partially protected hundreds, are given "Protected" cards. Of what practical use is such a law? It might be comprehensible if compulsory vaccination were a universal law throughout America. It may tend to lessen the importation of unvaccinated persons; it may serve to lull the public into a fancied state of security; but it certainly cannot be expected or depended upon to protect interior communities from the introduction and development of small-pox contracted before sailing. And that, and that only, as we have seen, is the evident intention of and reason for the vaccination regulations that apply to vessels where no small-pox has occurred during the voyage.

To secure the protection nominally sought by the vaccination regulations, every proposed passenger should be required to produce evidence of protection by vaccination, or revaccination, within a fixed time-limit prior to admission to the vessel, or before it leaves the calm waters of the port of departure.

For such a time-limit seven years might well be adopted. That is the period in force in some of the great continental armies, and it recommends itself to the popular belief in a complete change of the body within each recurring interval.

It may be difficult to secure this at the ports on the continent, but it would be a great deal gained if we could even secure it at the ports of departure in Great Britain.

The government of England recognizes a duty to passengers leaving her shores, and to the countries for which they are so leaving her. In paragraphs 44 and 45 of the imperial "Act to amend the law relating to the carriage of passengers by sea," it is enacted that

No passenger ship, except as hereinafter provided (that is, where no medical man can be obtained), shall clear out or proceed to sea until some medical practitioner, to be appointed by the emigration officer, shall be satisfied that none of the passengers or crew appear by reason of any bodily or mental disease, unfit to proceed or likely to endanger the health or safety of the other persons about to proceed in such vessel. Such medical inspection of the passengers shall take place either on board the vessel, or, at the discretion of said emigration officer, at such convenient place on shore before embarkation as he may appoint; and the master, owner, or charterer of the ship shall pay to such emigration officer a sum at the rate of twenty shillings for every hundred persons so examined.

If the emigration officer at any port shall be satisfied that any person on board, or about to proceed in any such passenger ship, is, for that or any other reason, likely to endanger the health or safety of the other persons on board, the said emigration officer shall prohibit the embarkation of such person, or, if embarked, shall require him to be relanded.

A person in the stage of incubation of small-pox is certainly "likely to endanger the health or safety of the persons on board." Every vacinally unprotected person embarking may be in that stage from recent exposure, consciously or unconsciously, to the infection, yet there being nothing in his appearance to betray his condition, it would not be discovered by this medical inspection.

It may be urged that a similar statement would also apply to the other infectious diseases. So, doubtless, it would; but we have in vaccination a ready means of protection against small-pox, which, unfortunately, we have, not as yet at least, against other diseases which likewise have a stage of incubation.

The enlargement of this medicinal inspection to include the examination as to the vaccinal protection of intended passengers, and the vaccination at that time by the government medical officer, by medical men employed for the purpose, or by the ship's surgeon, of all passengers who may not demonstrate previous protection within the required limit, would be the best means—and indeed the only possible and effectual means that I can see—of protecting this country from the development, subsequent to landing here, of small-pox contracted before sailing.

An occasional case might still occur on shipboard, where the person only embarked at a late stage of the period of incubation, but even here the vaccination, if performed before sailing, might modify or abort the attack. And from the protection of all others having been already

secured there would be no danger of the disease spreading on the vessel; whilst, by thus making sure of the vaccinal protection of all persons before sailing, the great majority of the cases of small-pox now occurring on shipboard, and all those occurring on or just after arrival at this side, would be prevented.

I have said that to secure the protection presumably sought by vaccination regulations every proposed passenger should be required to produce evidence of protection within a fixed time-limit. From the less general regard of the laws of health among the class from which steerage passengers are, as a rule, drawn, and from their greater danger of exposure to infection in the inferior class of lodging-house they occupy, as a rule, on their way to and at the point of departure, there is, to a certain extent, more risk from them than from passengers of a higher class. No class, however, is entirely free from the risk. And all of you who have paid any attention to this subject must be familiar with cases of small-pox introduced into our sea ports and interior communities by intermediate and cabin passengers.

I am of the opinion that the difficulty of including cabin passengers in the vaccination regulations has been much over-estimated. People now crossing the Atlantic to this side understand that, as a general thing, no questions are asked of cabin passengers, and so they take no special precautions. In most instances no trouble ensues, but every now and then a case of small-pox occurs on the voyage, perhaps among the numerous steerage passengers. Then the cabin passengers, ladies and all, may find themselves suddenly and unexpectedly confronted with the requirement that they must show their arms to and possibly submit to vaccination by a ship's surgeon or a quarantine officer, about whom they know nothing, and in whom, and in the purity of whose vaccine, they may have no confidence. Hence, very naturally, a great deal of trouble, vexation and opposition. For this is unquestionably an intolerable annoyance to which to subject people of that class. But once it were generally known that all passengers, cabin as well as other, would be required to furnish evidence of recent vaccination, first-class passengers going from this side for a trip to Europe, and those coming from Europe here, would, before leaving their homes, send for their family physician, be vaccinated by him if need be, and in any case provide themselves with vaccination certificates. This they would do as regularly, and as much as a matter of course, as they would provide themselves with steamship tickets, or with passports if about to travel where they are exacted. And steamship ticket-agents would remind those purchasing tickets, or otherwise taking their passage, of the obligation. On the voyage the ship's surgeon could quietly satisfy himself that all the cabin passengers possessed satisfactory certificates, and would certify that fact under oath to the quarantine officer at the port of arrival. And so cabin passengers would be saved from annoyance, without the present risk to the public



health, even if small-pox should occur on the vessel; and the distressing scenes alluded to, instead of increasing in frequency, would altogether cease to recur.

I am quite aware that during the late Montreal epidemic of small-pox the inland quarantine officers of Ontario, and of the United States Marine Hospital Service, found it necessary utterly to refuse to take written certificates; but the cases are not parallel. On the trains crossing the frontiers, hundreds of persons of all classes passed daily, and it was impossible to identify the holders of certificates. These certificates themselves might have borne the signatures of fictitious medical men, or, even if in every way correct, might be mailed back and used over and over again. But in steamships, during an ocean voyage, the surgeon could readily identify each passenger, if only by the names on the passenger-list. In the class of which cabin passengers are composed, it is indifference or carelessness as to revaccination, rather than deliberate fraud, that needs to be provided against. It is unlikely that any passenger of that class would procure or manufacture a bogus signature, or that he would cross the Atlantic under a false name merely for the sake of availing himself of some one else's vaccination certificate.

This association has already, at a former meeting, passed a resolution recommending concerted and simultaneous action by the executive quarantine authorities of American and Canadian ports as to regulations to be enforced on this side.

In the hope of obtaining the approval and support of this association towards the further effort to secure the vaccinal protection of passengers while it would be of real practical value, that is to say, before sailing, I beg now to present the following resolution:

WHEREAS, At the seaports and in the interior communities of this continent, an outbreak of small-pox is started from time to time by persons who have passed the quarantines of the American or Canadian ports apparently perfectly well, but in the stage of incubation of small-pox contracted before sailing, and who develop the disease subsequently to landing; and

*Whereas*, Nothing can prevent this but vaccination or revaccination within a time-limit, before or within the first day or two after sailing;

*Be it resolved*, That, in the opinion of this association, it is desirable that every effort be made to secure the enforcement of such protection by the inspecting government medical officers at the ports of departure.

### 3. REPORT OF THE SECRETARY AS SECRETARY OF THE SECTION ON STATE MEDICINE OF THE AMERICAN MEDICAL ASSOCIATION WHICH MET AT WASHINGTON, D. C., MAY 5, 6 AND 7.

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Section of State Medicine. Secretary's Report.

Relations of Meteorological Conditions to the Origin and Prevalence of Acute Diseases. Davis.

Hygiene in the Rural Districts. Jenkins.

The Duty of the Government in the Prevention of Tuberculosis. Flick.

The Disinfection of Excreta. Sternberg.

The Sanitary and Unsanitary Relations of Underground Waters. Bryce.

Simple Methods of Sewage Disposal. Chancellor.

Original Investigations on the Heating and Ventilation of School Buildings. Reed.

The Construction of School Buildings. Lincoln.

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#### Secretary's Report.

Chairman, J. D. Plunkett, Nashville, Tenn. Secretary, Benj. Lee, Philadelphia, Pa.

#### FIRST DAY.

The section met at the Columbian University, Washington, D. C., at 3 p. m. There were present and registered during the session forty-two delegates from all parts of the country.

In the absence of the chairman, Dr. J. D. Plunkett, Dr. John H. Rauch was, on motion of Dr. J. Berrien Lindsley, called to the chair.

The address of the chairman being necessarily passed over, the report of the committee on school hygiene was read by Dr. D. F. Lincoln, chairman of the committee. Dr. Lincoln prefaced his report by the statement that it was mainly synoptical and presented only such results as all the members had been able to agree upon. Several of the members of the committee had prepared papers on the special subdivisions of the general subject which had been assigned them respectively, and were present to read them as supplementary to the report.

At the conclusion of the reading of the report Dr. Lincoln presented a paper entitled "Remarks on the Construction of School Houses."

The report and paper were declared open for discussion.

Dr. Gihon assented to the propositions laid down by Dr. Lincoln in the main. He considered the reference of the speaker to the hygienic defects of the hall in which the meeting was in session especially well-timed. This was a building of modern construction, erected at a lavish expense for the express purpose of a class or school room, and yet as had been pointed out, its lighting was execrable, and as he had discov-



ered during the reading of the paper, its acoustic properties were still worse. With reference to the strictures passed upon natural ventilation, *i. e.*, by means of windows, he was not so thoroughly convinced. He had, when in charge of a naval school, adopted the expedient of placing a four-inch board under the edge of the lower sash, thus allowing an upward current of air to enter at the junction of the upper and lower sashes, and had found that ventilation could be quite satisfactorily secured in this way without creating dangerous drafts. It was objected to this that it only furnished a means for introducing fresh air, and did not provide for the escape of the foul air.

Dr. R. Harvey Reed replied that actual observation of an opening created in this way showed that there was an alternation of inward and outward currents. The air would enter for a few moments and then pass out for a similar length of time.

He considered that the foul odor noticed on entering an ill-ventilated school room was not in any sense dependent upon or to be taken as a measure of the amount of carbon dioxide in the air of the room. It depended on sulphuretted hydrogen, carburetted hydrogen and organic filth resulting from perspiration and respiration.

Dr. M. G. Motter, of Lancaster, Pa., suggested that in the same way that ventilation could be obtained by the four-inch board under the sash, it could also be obtained by having two panes of glass so adjusted on an ordinary sash that the air could pass freely in and out between them. He inquired whether inspection of schools was not a proper function of the health commissioner of a city.

Dr. C. A. Lindsley held that even though the air from a window raised with the four-inch board entered with an upward direction, its density compelled it to fall upon the heads of those near the window before admixture with the general air of the room.

Dr. McIntire agreed with Dr. Reed that the odor of the room in no way depended upon the presence of carbon dioxide, but upon the organic impurities, and that on the other hand the amount of carbon dioxide present could not be accepted as a test of the impurity of the air.

Dr. Lincoln remarked, in reply, that undoubtedly emanations of various kinds and of all kinds from the human body contributed to the foulness of the atmosphere of a school room, but that where carbon dioxide was found in excess, as a product of respiration, it indicated necessarily the presence of other impurities, also products of respiration and other excretory processes which are extremely difficult to detect and to determine. The value of the determination of the percentage of carbon of dioxide, therefore, was that of a general indicator of impurity.

Dr. Chancellor considered it of quite as much importance to provide special means for the expulsion or exhaustion of the foul air, as for the introduction of the fresh. Two bodies cannot occupy the same space at the same time. Unless the foul air is first removed, the fresh air cannot

enter. In cold weather the pure air should be introduced warm; the outer air at a freezing temperature should not be brought in.

The difficulty of obtaining a pure outer air in crowded centers of population is not sufficiently appreciated. In these days of rapid transit why should we not establish our public schools in suburban districts, where there is an abundance of pure air, and furnish proper facilities for the pupils to reach them.

Dr. Lincoln pointed out the extensive character of the work assigned the committee, stated that it did not by any means consider that it had yet accomplished this work, and in the name of the committee requested its continuance.

On motion this request was unanimously acceded to.

The committee thereupon continues as follows, to report next year:

*Committee on School Hygiene.*—D. F. Lincoln, Geneva, N. Y., chairman; George H. Rohé, Baltimore, Md.; J. G. Pinkham, Lynn, Mass.; W. L. Schenck, Osage City, Kansas; R. Harvey Reed, Mansfield, Ohio.

Dr. Rauch requesting to be excused from the duties of the chair, Dr. A. L. Gihon was, on motion, called to its occupancy.

Dr. Gihon inquired whether the roll of the committee on state medicine had been called, and stated that it had been customary to do so. The roll was therefore called, and it was found that but five members out of forty-two (two of the committee being deceased) had registered in this section. Further discussion of the subject was deferred until after the reading of the papers.

Dr. R. Harvey Reed, of Ohio, then read his paper entitled "Original Investigations on the Heating and Ventilation of School Buildings." This paper was accompanied by the exhibition of a large number of charts illustrating the following points from actual and accurate observation:

1. Date and time of day inspection.
2. Name of building and room.
3. Number of cubic feet of air in room.
4. Number of pupils present.
5. Outside temperature.
6. Temperature of room at levels of head, feet and ceiling.
7. Humidity outside.
8. Humidity in room at levels of head, feet and ceiling.
9. Kind of heating apparatus in use.
10. System of ventilation employed.
11. Number of cubic feet of fresh air supplied and of foul air discharged per hour.
12. Estimation of amount of carbon monoxide present in the air of the room.
13. Estimation of the amount of carbon dioxide present in the air of the room.

14. Consideration of the amount of organic matter present in the air of the room.

15. Bacteriological examination of the air of the room.

16. Miscellaneous remarks and suggestions.

17. Conclusions.

The paper of Dr. George H. Rohé, member of the committee on school hygiene, was then read by the author, the title being "The School Sanitary Inspector; His Qualifications, His Duties and His Powers."

The paper of Dr. W. L. Schenck, a member of the same committee, on "The Personal Hygiene of School Children," was next in order. In the absence of the author the secretary read an abstract of the paper which had been prepared by the chairman of the committee, Dr. D. F. Lincoln. The subjects embraced were physical training, study, time and amount, recess and location, instruction in hygiene, by whom and how to be taught, and the prevention of contagious diseases.

The secretary read a telegram from Dr. Octavius A. White, who had been announced to open the discussion on this subject, stating that illness prevented his presence. Dr. Gihon therefore called upon Dr. N. S. Davis, as the oldest member of the section, to take his place.

Dr. Davis spoke in terms of high commendation of the industry displayed in the preparation of the report and the various supplementary papers, especially the tabular work of Dr. Reed's paper.

The period of childhood was certainly that in which the greatest results could be accomplished by proper hygienic influences. Could we have such influences in active operation in school as well as at home, it is not too much to hope that nearly all of the defects which we call hereditary could be eliminated from our people in the course of a few generations. It should be the especial duty of the physicians to instruct the heads of families in which he is the medical adviser in the laws of health, especially as regards growing children.

Dr. Cochran being called upon, said that he had listened with amazement to the proposed qualifications for school inspectors. Certainly it would be a long time before it would be possible to inaugurate such a system in his part of the country. He could only express his gratification at what had already been accomplished by the gentlemen who had read the papers.

Dr. Hibberd described the condition of the country school house of his early days, in which lack of sufficient introduction of fresh air was not a noticeable feature.

Dr. Lyster, of the Michigan State Board of Health, spoke with regard to that portion of Dr. Reed's paper which referred to the Smead system approvingly. His board had been deeply interested in the study of that system in numerous educational buildings in their state. So far as it was associated with a process for dessicating faeces, they had been com-

pelled to report adversely upon it. When disconnected with any such process, and used simply for the introduction of pure warm air and the exhaustion of impure air it certainly worked admirably.

Dr. McCormack, secretary of the State Board of Health of Kentucky, while deeply interested in so much of the papers as he had been fortunate enough to hear, and commending their purpose, coming as he did from a western state, felt that the suggestions were many of them such as could only be successfully carried out in the land which we name Utopia.

He moved that the reports and papers be referred to the association and the committee continued. It was carried.

Dr. McCormack stated that a resolution was passed in the association at the morning's session, calling upon each section to appoint a committee to confer with similar committees from the other sections to consider the subject of perfecting the organization and improving the work of the sections.

He therefore moved that the chair appoint a committee of three for this purpose.

The motion was carried and the chair appointed Drs. R. Harvey Reed, A. N. Bell and J. T. Reeve as such committee.

The section then, on motion, adjourned to meet at the same place on Wednesday, May 6, at 3 p. m.

#### SECOND DAY.

The section convened at 3 p. m., May 6, 1891, pursuant to adjournment.

Dr. J. Berrien Lindsley, of Nashville, Tenn., the oldest ex-chairman present, was, on motion, called to the chair.

Dr. N. S. Davis, of Chicago, Ill., then presented his report as chairman of the committee on "Meteorological Conditions of the Atmosphere and their Relations to Coincident Prevalence of Disease." The report was founded on an immense number of careful meteorological observations, and sanitary and mortuary returns, showing much faithful and persevering labor. It drew attention to the apparent influence of the presence of ozone and peroxide of hydrogen in the atmosphere in diminishing the amount of albuminoid impurities. The alternate prevalence of typhoid fever and pneumonia was adduced in favor of this theory. A considerable portion of the report was devoted to the consideration of the influence of the presence of epidemic influenza, in increasing the frequency of many other diseases, such especially as pneumonia, acute bronchitis, typhoid fever and diarrhoeal affections.

The report was listened to with deep interest. Discussion being called for, Dr. Flick, of Pennsylvania, considered that a serious source of error existed in all our statistics of influenza, from the fact that many cases of pneumonic complications were reported as pneumonia, which,



when the symptoms were carefully sifted, could not be maintained to be so. It was a special condition peculiar to influenza, in which localized foci of inflammation were found distributed throughout the lung tissue. The same might be said of the diarrhoeal complications. Strictly, all of these cases should have been returned as influenza.

Dr. Farrington, of Ireland, who was present by invitation, drew attention to the somewhat remarkable fact, that the statistics of influenza in his country showed that this disease made its appearance with them at about the same time that the earlier cases were reported in America.

Dr. Davis was fully aware of the errors liable to creep in from false diagnosis, as referred to by Dr. Flick. These liabilities, however, existed at all times and in all places. They were not confined to times of epidemic or to certain cities. His own impression was very strong that, during the prevalence of an epidemic, and especially one of such an affection as influenza, which manifested itself in so many different ways, the danger was rather that other affections should be falsely designated as cases of the prevailing disease which was uppermost in every mind, than the reverse. The same remarkable simultaneousness of appearance observed by the gentleman from Ireland, on the two sides of the Atlantic, was observable in different sections of our own country.

In conclusion, Dr. Davis requested to be excused from a further continuance of the self-imposed labor which he undertook at the meeting at Newport, in the preparation each year of this report, feeling that his declining years and strength would not permit him to devote the necessary time and energy to it. The secretary remarked that whatever of physical abatement of force and diminished elasticity the reader of the report might be personally conscious of, these conditions had certainly not in the slightest degree reached his mental vigor. He had been in doubt whether most to admire the great value of the report or the amount of labor which had been expended in its preparation. It was, however, due to Dr. Davis that his request should be granted, and in seconding it, he also wished to move a special vote of thanks to that gentleman for his services in connection with the section. The motion was carried. Dr. Davis feelingly acknowledged the compliment, and proceeded to sketch briefly, for the benefit of those who should take up the work of the committee, the lines on which it had been prepared to carry on these observations. The different agencies on which he had relied for information were:

*First.* The United States signal service observers, at such points as it had been deemed advisable to obtain data, for the meteorological observations which they are by law required to make.

*Second.* Other scientific observers, official or voluntary, for determinations of ozone and peroxide of hydrogen at or near the same points.

*Third.* Chemists who could be relied upon for examinations of the atmosphere for organic impurities, at the same stations; and,



*Fourth.* Physicians, who were called upon to make returns of all cases of acute disease occurring in their own practice, in the neighborhood of these stations.

He regretted to be compelled to say that, while the signal service officers were perfectly ready to give all the assistance in their power, and scientific voluntary observers were also to be depended on, and a chemist could occasionally be found who was willing to devote attention to the subject, the physicians could not be aroused to a sense of the importance of the subject, or to give the slightest assistance.

Dr. Hibberd suggested that it would facilitate the work of the section in this respect if Dr. Davis would kindly name his own successor in the work, and a motion was passed requesting him to do so, at his convenience.

In the absence of the author, Dr. C. A. Lindsley read the paper of Dr. Joseph R. Smith, colonel and surgeon United States army, medical director department of Arizona, entitled "Sickness and Mortality in the Army of the United States."

Dr. A. N. Bell, of Brooklyn, then read his paper on "The Beneficence of Disease."

A paper on "The Sanitary and Unsanitary Relations of Underground Waters" was next read by Dr. Peter H. Bryce, of Toronto.

Dr. Lawrence F. Flick, of Philadelphia, followed with a paper on "The Duty of the Government in the Prevention of Tuberculosis."

Opportunity for the discussion of these valuable papers, which were listened to with great interest, was prevented by the fact that it was necessary to vacate the room by a certain hour.

Election of officers for the ensuing year being now in order:

Dr. Bell nominated Dr. Benjamin Lee, of Philadelphia, as chairman.

There being no other nomination, a *viva voce* vote was taken, and Dr. Lee was announced as elected.

Dr. Hibberd nominated Dr. Lawrence F. Flick, of Philadelphia, as secretary.

There being no other nomination, a *viva voce* vote was taken, and Dr. Flick was announced as elected.

On motion of Dr. Bell, it was resolved, that the chairman and secretary elect be a committee to nominate the members of the committee on state medicine, and be instructed to send the list of the names to the secretary of the association.

The section then, on motion, adjourned to meet at the same place at 3 p. m., May 7, 1891.

### THIRD DAY.

The section met, pursuant to adjournment, at 3 p. m., May 7, 1891.

Dr. J. Berrien Lindsley was called to the chair. The secretary announced that he had received a telegram from Dr. J. D. Plunkett, the

chairman of the section, stating that he had been detained by the sudden illness of his wife, and regretted that he would be unable to be present.

Dr. A. N. Bell moved that the secretary be instructed to express to Dr. Plunkett the regrets of the section at his absence, and to request him to forward at once a copy of his address for publication. It was carried.

Dr. H. O. Marcy being compelled to read a paper in another section, his paper was substituted for the first paper on the programme, the author of which was absent. Dr. Marcy read his paper on "The Coroner System in the United States."

The paper of Dr. George M. Sternberg, lieutenant colonel and surgeon United States army, on the "Disinfection of Excreta," was read, in the absence of the author, by Dr. Peter H. Bryce, of Ontario.

Dr. C. W. Chancellor, secretary of the State Board of Health of Maryland, then read a paper on "Simple Methods of Sewage Disposal," accompanied by the presentation of a model apparatus for the purpose of use in suburban residences.

The secretary read a letter from Dr. Robert C. Davis, member of the board of health of the city of New York, stating that owing to illness, he regretted to be unable to be present to open the discussion on these papers, as announced.

Discussion being invited, Dr. Lyster, of the Michigan State Board of Health, remarked on the fact of the necessity of some definite action on the part of the section for the protection of water supplies, both in wells and rivers, from the sources of pollution referred to in Dr. Chancellor's paper. He thought we should put ourselves on record as utterly condemning the use of the ordinary unprotected privy vault.

Dr. Bryce, while greatly interested in the manner in which Dr. Chancellor has sketched the different methods of sewage disposal, and in the method proposed for dealing with it in small quantities, which he could see might work very fully for separate houses, confessed that he had been disappointed in the want of success attributed by the reader of the paper to systems of sewage irrigation. Water carriage has such a vast advantage over all other systems in convenience, and in cleanliness, and in inoffensiveness about the residence or building, and with good modern plumbing may be made so perfectly safe to the occupants of the house, that we are practically compelled to accept it for all towns of any size.

It had been demonstrated that the separate system could be introduced for a town of 5,000 inhabitants, at a cost of from \$7,000 to \$9,000 per mile, with all necessary appliances for flushing automatically. The question of expense, therefore, is met. The only question is, in cases where there is not a large river with a strong current, what to do with the effluent. It did seem to him that Dr. Chancellor had overstated the difficulties attendant upon treating this by irrigation. As an instance of how readily this might be done, he referred to the system in use by

the London hospital in Ontario. The entire plant, from beginning to end, cost only \$25,000, and it sufficed for the necessities of a population of 1,200 people. The separate system was adopted. The irrigation farm was only four acres in extent. One-third of this surface was used every day, so that each portion had two days of rest. The effluent flowed on to it, so thoroughly mixed by its rapid passage through the pipes, that it was absolutely fluid and left only a thin film on the surface, which when dry was raked in by a laborer. There had never been the slightest offensive odor from it, and chemical tests indicated complete nitrification of all the organic filth.

Dr. Chancellor, in closing the discussion, said that Dr. Bryce had evidently misunderstood him, as regarded the intent of his paper, which was not intended to take up the discussion of large systems of sewerage, but only of devices, where large systems are not available. His figures on the expensiveness of irrigation were with reference to places in which it was absolutely necessary to prepare the ground by an elaborate system of double underdrains. Very few places were so fortunately situated as London with its natural filter bed of sand close at hand. And even then he feared that in a few years it would be necessary for them to take in new ground for the purpose. This had been the experience in Berlin and other continental cities. In regard to the purification of infected wells, he had often been able to accomplish it by having a quantity of chloride of lime placed in the well, allowed to remain a few hours, and the well then pumped out completely. By repeating this process two or three times, the water could often be completely purified. Of course, when it was practicable, he preferred to have such a well abandoned.

The next and last paper of the programme was read by Dr. G. W. Jenkins, of Kilbourne City, Wisconsin, under the title "Hygiene in the Rural Districts."

The suggestion contained in the paper that physicians could do much to improve the hygienic conditions in rural districts, by forming social clubs, which should meet from house to house, and before which demonstrations of truths familiar to hygienists, which would interest and impress the minds of the people, was considered a practical and valuable one by Drs. Lee, Lyster and other members.

The section was then declared adjourned, to meet at the time and place determined upon by the association, in the year 1892.

BENJ. LEE,  
*Secretary.*

Relations of Meteorological Conditions to the Origin and Prevalence of  
Acute Disease.

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By N. S. DAVIS, M. D., *Chairman, of Chicago.*

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The work originally assigned to your committee was commenced by its chairman in 1874, and it was prosecuted with more or less activity and success until 1885 since which time it has received less attention.

Reports containing important facts and the results of original investigations were made and published in the volumes of transactions of the association for 1875, 1877, 1879, 1881 and 1882, and in *The Journal* of the association, vol. II, pp. 85-169.

The leading object of the committee has been to obtain more exact and reliable knowledge concerning the causes and circumstances that originate or increase the prevalence of the various forms of acute disease, by procuring and preserving continuous daily records of all appreciable conditions of the atmosphere, water and soil, and coincident record of the date of the commencement of acute diseases, in localities representing different parts of the country and various climatic conditions. For details of the plan adopted and its practical working, I must refer you to the report made to the association in 1883, and published in *The Journal*, vol. II, pp. 85-169, 1884. That report included the results of one year of observation and record of the ozone and hydrogen peroxide in ten or twelve stations, as indicated by uniform test papers, and in Chicago a complete record of the relative amount of free and albuminoid ammonia for the same period of time, as determined by Professor J. H. Long, of the laboratory of the Northwestern University. These records, in connection with those previously made, enable us to deduce the following propositions:

1. That the indications of the presence of ozone and hydrogen peroxide in the atmosphere vary very much at short distances, being generally increased by high winds, cold dry air, and proximity to large bodies of water, and diminished by still, warm and moist air, and still more in the interior of cities, houses and densely populated districts.

2. That an appreciable amount of both free and albuminoid ammonia is almost always present in the atmosphere, especially in cities and densely populated districts of country. The albuminoid is much more abundant than the free ammonia, and being chiefly derived from putrefactive changes in animal matter, its relative prevalence is greatest during the autumn and early winter months, and least during the spring and early summer, when it is most actively consumed by growing vegetation.

3. The observations of Prof. Long and others show that putrefactive processes in the presence of moisture favor the production of free ammonia, while with greater dryness, more albuminoid ammonia is liber-



ated, and that both are capable of being carried by atmospheric currents several miles from their source. His experiments, as detailed in the report of 1884, also show that the free and albuminoid ammonia are directly acted upon by the ozone, and their identity destroyed by entering into new combinations or being resolved into ultimate elements.

If these propositions are correct, they point directly to the important fact that whenever we have, coincidently, an abundance of decomposable animal matter on the earth's surface, a favorable temperature, slow atmospheric currents, a minimum of moisture, and little active vegetable growth, albuminoid ammonia will appear most abundant in the atmosphere; sufficiently so, it would seem, to either become the pabulum for the rapid growth of pathogenic germs, or for the evolution of toxalbumens or ptomaines, and thus aid in explaining the rapidity of development and spread of some important epidemics.

On the other hand, when we have coincidently, either dry cold air or rapid vegetable growth with rapid atmospheric currents, and frequent fresh falling water, we have increased indications of the presence of the active oxidizers, ozone and hydrogen peroxide, with the minimum of albuminoid ammonia in the atmosphere. The influence of these combinations of atmospheric elements on the prevalence of both endemic and epidemic diseases, is pretty clearly shown by the recorded observations made in Chicago during the last ten years, particularly in reference to typhoid fever, pneumonia and epidemic influenza or la grippe.

In speaking of atmospheric and climatic conditions at Chicago, it should be borne in mind that the city is built on nearly level ground, skirted for many miles to the east and northwest by Lake Michigan, and to the west and southwest by a still broader expanse of nearly level, rich prairie country, while the most prevalent winds are from the southwest and northeast. The winter of 1880-81 was characterized by at least the average degree of coldness and other ordinary atmospheric conditions, but was followed late in March, 1881, by an extraordinary fall of snow over a wide district of country. Melting rapidly, it caused unusual floods and thorough saturation of soil during the month of April. But for three months following May 1 there was not enough rainfall to wet the dust in the streets, and only an ordinary average during the months of August and September, while the prevailing winds were from the southwest, and unusually light or slow. This early complete saturation of the soil, followed by protracted dryness, with average summer heat and comparatively slight atmospheric currents, strongly favored the formation of an unusually large amount of albuminoid ammonia, with only occasional traces of ozone. The records of disease and mortality show that early in June attacks of typhoid fever began to be more frequent, and the number increased rapidly through July and August, culminating in September, and then declining to the ordinary average through October and November. During the eight months from May 1 to December 31, 1881,



the whole number of deaths from typhoid fever, as reported to the city health office, was 527; while the total number reported for the corresponding months of 1880 was 143, and for the same in 1882 was only 235. As the extraordinary prevalence of typhoid fever in 1881 diminished to nearly the average of other years in November and December, attacks of pneumonia began to increase, and culminated in a decided excess above the average in January, 1882, when 122 deaths were recorded from that disease, whereas only 48 had been recorded during the corresponding month of the preceding year. But the most important fluctuations in the prevalence of certain diseases, and coincident extraordinary atmospheric conditions, have been observed during the years 1890 and 1891.

At the annual meeting of the American Medical Association, May, 1890, I had the pleasure of reading a brief paper on the meteorological and other local conditions coincident with the prevalence of epidemic influenza in Chicago during the preceding winter. But as the figures regarding the prevalence of diseases given in that, were limited to the older twenty-four wards, and included only the two months prior to the appearance of the epidemic and two months after its subsidence, I have taken the liberty of extending my observations regarding the further prevalence of that disease in the same city, and its relations to the prevalence of other diseases of importance. The statistics given in this paper relate to the entire city, with a population, as by the census of 1890, of 1,100,000. The diseases considered will be designated as pneumonia, other acute affections of the respiratory organs, influenza or la grippe, typhoid fever, acute diarrhoeal diseases and sunstroke. The acute diarrhoeal diseases will include cholera infantum, cholera morbus, diarrhoea and dysentery. The following tables have been carefully compiled from the books of the registrar of vital statistics in the health office of Chicago, and extend over the entire years 1889, 1890, and the first quarter of 1891. Of course they refer only to deaths, and afford a basis for only a proximate estimate of the number of attacks of each disease.

#### MORTALITY FOR YEAR 1889.

| CAUSE OF DEATH.                           | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|-------------------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| Pneumonia. . . . .                        | 128      | 111       | 145    | 126    | 83   | 57    | 47    | 44      | 61         | 93       | 107       | 168       | 1,170  |
| Other acute respiratory diseases. . . . . | 157      | 96        | 90     | 91     | 78   | 59    | 50    | 38      | 29         | 68       | 71        | 109       | 956    |
| Epidemic influenza. . . . .               | 30       | 21        | 15     | 12     | 16   | 18    | 29    | 64      | 77         | 68       | 68        | 1         | 1      |
| Typhoid fever. . . . .                    | 11       | 5         | 13     | 18     | 21   | 46    | 594   | 459     | 297        | 84       | 42        | 25        | 1,675  |
| Acute diarrhoeal diseases. . . . .        | 11       | 5         | 13     | 18     | 21   | 46    | 594   | 459     | 297        | 84       | 42        | 25        | 1,675  |
| Sunstroke (coup soleil). . . . .          | 1        | 1         | 1      | 1      | 1    | 1     | 3     | 1       | 2          | 1        | 1         | 1         | 7      |
| Total. . . . .                            | 303      | 241       | 377    | 366    | 260  | 227   | 671   | 546     | 671        | 254      | 290       | 295       | 4,182  |

## MORTALITY FOR YEAR 1890.

| CAUSE OF DEATH.                           | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|-------------------------------------------|----------|-----------|--------|--------|------|-------|-------|---------|------------|----------|-----------|-----------|--------|
| Pneumonia. . . . .                        | 518      | 295       | 283    | 172    | 166  | 78    | 41    | 59      | 65         | 85       | 123       | 188       | 2,073  |
| Other acute respiratory diseases. . . . . | 330      | 171       | 181    | 122    | 95   | 64    | 40    | 49      | 48         | 79       | 88        | 146       | 1,413  |
| Epidemic influenza. . . . .               | 64       | 37        | 7      | 2      | 1    | 82    | 107   | 115     | 95         | 72       | 67        | 47        | 111    |
| Typhoid fever. . . . .                    | 53       | 136       | 103    | 45     | 82   | 107   | 86    | 115     | 95         | 72       | 67        | 47        | 968    |
| Acute diarrhoeal diseases. . . . .        | 53       | 67        | 31     | 38     | 33   | 106   | 571   | 455     | 198        | 69       | 22        | 14        | 1,767  |
| Sunstroke. . . . .                        | ..       | ..        | ..     | ..     | 2    | 119   | 25    | 4       | 1          | 1        | ..        | ..        | 152    |
| Total. . . . .                            | ..       | ..        | ..     | ..     | ..   | ..    | ..    | ..      | ..         | ..       | ..        | ..        | 6,484  |

## MORTALITY FOR FIRST QUARTER 1891.

| CAUSE OF DEATH.                       | January. | February. | March. | Total for first quarter 1889. | Total for first quarter 1890. | Total for first quarter 1891. |
|---------------------------------------|----------|-----------|--------|-------------------------------|-------------------------------|-------------------------------|
| Pneumonia. . . . .                    | 280      | 238       | 722    | 384                           | 1,066                         | 1,235                         |
| Other respiratory affections. . . . . | 176      | 172       | 344    | 343                           | 682                           | 692                           |
| Epidemic influenza. . . . .           | 4        | 6         | 155    | ..                            | 108                           | 165                           |
| Typhoid fever. . . . .                | 67       | 61        | 71     | 66                            | 292                           | 199                           |
| Acute diarrhoeal diseases. . . . .    | 28       | 42        | 71     | 29                            | 151                           | 141                           |
| Total. . . . .                        | ..       | ..        | ..     | 822                           | 2,329                         | 2,432                         |

The mortality from the diseases named in the foregoing tables, as shown for 1889, is very nearly the average ratio of mortality from the same diseases for a series of years. If there is any deviation, it is in a slight excess of mortality from diarrhoeal diseases during the early waves of high temperature in July, accompanied by a few sunstrokes. Taking that year as the standard of average mortality, not only for the year but also for the several seasons of the year, we are enabled to see the marked deviations from that in the table for 1890 and the first quarter of 1891, both as regards the occurrence of the epidemic influenza and its apparent influence on the mortality from other diseases. Thus, while the total mortality in 1890 from pneumonia and other acute diseases of the respiratory organs was 2,106, only one-third of which occurred during the first quarter, *i. e.*, January, February and March, and only one death from the epidemic influenza, which occurred the last week of the year, the total mortality from pneumonia and other acute diseases of the respiratory organs in 1889 was 3,486, more than half of which took place during the first quarter, and for those months was double the mortality from the same diseases the preceding year. Coincidentally, the influenza epidemic that had just shown itself the last week of December, 1889, rapidly culminated in January, 1890, and almost as rapidly declined through February and March, leaving a recognized direct mortality of only 111. The reappearance of this epidemic influenza during the first 24-16-91.

quarter of 1891, at first mildly, occasioning only four deaths in January and six in February, but suddenly culminating with 155 in March, was accompanied by the same extraordinary mortality from acute diseases of the respiratory organs as in 1890.

Thus the table for 1891 shows the mortality from pneumonia in January, 280; February, 233, and in March, 722, while that from other acute diseases of the respiratory organs was, for January, 176; February, 172, and March, 344, making the total mortality from these diseases during the first quarter of 1891, 1,927—or 149 more than the unusual mortality of the same month of 1890, and 1,200 more than in 1889, representing the ordinary average. The same influenza epidemic influence was plainly seen, though less exaggerated, on the mortality from typhoid fever and diarrhoeal diseases. Thus, during the first quarter of 1889 the mortality from typhoid fever was only 66, while for 1890, it was 292, and for the same months in 1891 it was 199. And from acute diarrhoeal diseases during the first quarter of 1889 the mortality was 29, for the same period of 1890, 151, and for 1891, 114. After making a fair allowance for increase of population during the past two years and three months, the foregoing figures show that the same etiological conditions that gave rise to the epidemic influenza in the city of Chicago, caused at the same time the mortality from pneumonia and other acute diseases of the respiratory organs to be more than doubled, from typhoid fever to be trebled, and from diarrhoeal diseases to be increased five-fold.

*Etiological Conditions.*—In considering the etiological conditions preceding, accompanying and following the epidemic of the first quarter of 1890, in the paper I read to this section at the last annual meeting, it was shown that during the time of the epidemic the water supplied to the inhabitants contained an unsafe amount of free and albuminoid ammonia and of micro-organisms. It was also shown that during the month preceding the outbreak of the epidemic, the mean atmospheric temperature was 9° F. above that of the same month of the preceding healthy year, and that of the month during which it reached its climax, the mean temperature was 2.4° F. above that of the same month of the preceding year. It was further shown that during the epidemic and for three months preceding, the atmospheric currents had been light and from the southwest.

An examination of the meteorological conditions as shown by the records of the signal service station in Chicago, develops the fact that for three months prior to the reappearance of the epidemic in 1891, the prevailing winds were from the southwest, the mean temperature above the average of healthy seasons, with an unusually light precipitation, either in rain or snow, until after the climax of the epidemic influenza had been reached, and evidences of impurities in the water supply remained the same as the preceding year. When the epidemic had reached its climax the prevailing wind changed to the northeast, and

an increased precipitation, chiefly in the form of light snow followed. But on the evening of the thirtieth of March a copious rainfall occurred, accompanied by thunder and lightning, which was followed by a rapid decline of the epidemic and its associated diseases through the month of April.

It will be seen by our tables that the epidemic influence that culminated in January, 1890, did not reach its climax until in March, 1891, and still the preceding and accompanying conditions of the atmosphere and water, the two elements common to our whole population, were nearly the same in both seasons. What influence, if any, the extraordinary waves of heat in June and July, 1890, may have had in lessening the vital resistance of the people and thereby increasing the mortality from the influenza, pneumonia and acute respiratory affections that followed several months later, can only be a subject of conjecture. That the varying degrees of atmospheric heat as characterizing different seasons of the year, and different years, exert a very important influence on the physiological and pathological processes taking place in the living human body, there can be no reasonable doubt. That the influence of this agent is much modified by the coincident degrees of aqueous vapor, or atmospheric moisture, is equally certain. And, as already stated in this and a preceding paper, the varying quantities of organic products in the forms of free and albuminoid ammonia pervading the atmosphere and their antagonistic elements, ozone and hydrogen peroxide, constitute the additional elements to which we must turn our attention in searching for the active etiological factors in such widespread and rapidly developed epidemics as influenza and dengue. The severe and protracted depressing effect of the essential cause or causes of the recent influenza epidemics on the functions of the cardiac, vaso-motor and ganglionic systems of nerves, coincident with excessive irritant action on the respiratory and digestive organs, is very analogous to the action of some of the ptomaines or toxalbumens. And it is difficult to find any other atmospheric elements than the albuminoid, that could be capable of either conversion directly into toxalbumens or of becoming pabulum for the rapid propagation of pathogenic microbes.

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#### Hygiene in the Rural Districts.

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By GEO. W. JENKINS, M. D., of *Kilbourn City, Wis.*

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To be able to successfully combat all the diseases which flesh is heir to, "is a consummation devoutly to be wished;" but greater is it to be able to point out the hidden and lurking causes of disease, and thereby



prevent the ravages it entails upon the human family—often widespread in its effects, and equally disastrous in its results.

Ever since the Lord made "man and breathed into his nostrils the breath of life, and man became a living soul," disease and death have surrounded him at every turn, and it is a lamentable fact that man, left to himself without the direction of superior intelligence, would fall into habits of neglect of necessary cleanliness, thereby bringing disease upon himself and the community in which he resides. So we read in the Holy Writ that when the Lord took the children of Israel unto Himself as His chosen people, He gave them directions which would conduce to their continuance as a nation, and their health as individuals, and was careful to show them how to observe the great laws of health. One in particular in Deuteronomy 23: 12, 13, in regard to the disposition of all fecal matter—that it should be carried without the camp and properly disposed of in the earth. Moses was one of the first hygienists on record; and much better would it have been for the human family to-day if his commands had been followed to the letter.

Having had a large experience in the practice of my profession in the rural districts, I have been impressed with the fact that the people that I have visited have been in a most lamentable state of ignorance of the fundamental principles of right living and hygienic conditions of their surroundings.

One great evil that constantly confronts you in the rural districts is the unwholesome water supply. Too often the water in wells is contaminated by surface water and drainage from the house and barnyards. The well is dug near the kitchen door to be of easy access to the family and in close proximity to the woodpile, and year after year the well receives the wash water and slops from the kitchen, after first filtering through the chips and *débris* that lie about in the back yard. At first the earth serves as a filter for all impurities which the water contains, before it reaches the well. But after a time the earth becomes so charged with filth by constant filtration that it ceases to dispose of its impurities and the waste from the kitchen reaches the water in the well in nearly the same condition it left the kitchen-maid's hands from the washtub or the slop basin.

A few cases to the point will illustrate more fully the truth of the above assertions. They are from a report of cases that I presented to the State Board of Health of Wisconsin.

A family of father, mother and five children, were all more or less sick with a fever induced, as I fully believed, by drinking water which was very much contaminated by drainage from the barnyard. The well was situated between the house and barn, with a gentle slope toward the well. The yard was very foul from the accumulation of the rubbish of years, and the water in the well became impregnated with the filth from this source until it looked, tasted and smelt badly. I ascertained from



the family that when they moved upon the place the frost was in the ground, and the water, to all appearances, was pure and good. When the frost came out the water began to look and taste badly. Of this water all the family used until I was called to see the mother and daughter who were suffering with a malignant form of diphtheria, attended with great depression of all the vital powers and bloody passages from the bowels. I explained to them the probable cause of their sickness and forbade the further use of the water. They soon began to improve and made a good recovery, after using good water from another source. They continued to use the good water for a time, and then they returned to the use of the water in the contaminated well. The mother very soon came down with exactly the same symptoms as before. The family soon left this farm, and a German, who owned it, having a family of eight children, moved upon it. He declared that the water was good and pure, and that the doctor did not know anything about it. After using the water for a short time, one of the children came down with diphtheria, croupal form, and died in less than a week. After this every member of the family was sick of the same disease, and five of them died in less than ten days from the date of the first attack—nor were there any other cases of diphtheria in that section of the country where it proved as fatal as to this family. Is it reasonable to suppose that the cause of that sickness lay in any other direction than that filthy well? I think not.

Again, during the summer of 1881, I noticed that all the cases of typhoid fever which occurred in a certain village, were in families who obtained their water supply from one particular well. Its water was cold and looked pure. This well stood in the center of a little square, and in the summer months, cattle and other animals were allowed to stand around its curbing fighting insects and stamping the ground until a hole was made sufficiently large to catch all the water that was wasted during the drawing of it by the several families. In a short time this collected water in the hole was reeking with filth from the animals, and soaked through the earth into the well. I insisted that the typhoid fever originated from the water in that well, but could not make its patrons believe it contained any impurities, until I proved it to them by actual demonstration. I then ordered the ground dug up around the well down to the rock. The well from the rock to the surface of the earth contained tubing about six inches in diameter. This tubing was firmly fixed by filling in around it cement and stone to the surface of the earth, thus effectually cutting off all surface drainage. After having the well thoroughly cleaned no more typhoid fever originated from that well, nor have any cases occurred in that section up to the present date. Many farmers allow their cattle in the same way about their wells, with no thought of the possibility of such results.

During the past year I was called early in December to attend a case

of diphtheria in a section of country where there had been no exposure, and found on looking for the cause that the family had been in the habit of protecting their potatoes in the cellar from the frost by covering them four or five inches deep with forest leaves. On further inquiry I ascertained that these same leaves had been left in the cellar for several years, and as there was no window or outside door, the cellar could not be ventilated. The floor above the cellar was old and poor, and the emanations from the decaying leaves could be distinctly smelled. I ordered the leaves to be removed immediately, door and windows made that the cellar might be ventilated, and chloride of lime freely used. That made an end of diphtheria in that family.

How often is it the case when the doctor enters the cellar to ascertain the cause of sickness in any given case, that he finds it poorly ventilated, containing decaying vegetables and decomposing matter of various kinds—and in this same cellar the milk is kept from which their butter is made. As milk forms so large a part of the farmers' diet it should be pure, but most farmers never think that milk can become contaminated by being kept in an atmosphere that is full of the germs of decaying substances.

The truth of the matter is this, that notwithstanding lecture upon lecture, line upon line, and precept upon precept, is given to those whom it is calculated to benefit, little good will result therefrom, unless it is given in a way commensurate to their degree of understanding and ability to receive it.

If the people living in the rural districts of our country could be made to understand the great importance of being enlightened upon this important subject, many lives might be saved and much sickness prevented, but so far as I know, no one has ever suggested any plan by which this great branch of their education might become popular and highly instructive to them. I propose to offer a few suggestions by which that object may be obtained.

My idea to gain that desired end, is, that the physicians of two or more adjoining townships should form themselves into a hygiene society, to meet at stated times at some farmer's house, and then and there show to all that attend those meetings, the dangers that lie hidden and unsuspected about them.

Let any one member of the hygiene society be required to report upon some subject connected therewith at any one meeting, which may be fixed by previous announcement, and report fully upon that subject, by the use of tests and other demonstrations as the subject demands, to make it intelligible and instructive to the people.

Of course this will require labor and time of the members composing the board, but if they can prevent disease, and save life by so doing, they will be richly repaid for all their efforts—life and health are of more value than money.

It is the every-day duties that we are called upon to attend to—the little details, and to point out again and again a lurking danger to health and life; it is this faithfulness in little things that accomplishes so much that is lasting and beneficial. Say that these duties are irksome—granted. What duties of the physician are not so, from the time that he begins his professional career until it ends? What is his reward?

We receive it every day in the consciousness of having been the means of preventing disease as well as saving the lives of many: and he whose eyes never slumber will surely reward us according to the motives that have prompted us to perform them.

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### The Beneficence of Disease.

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By A. N. BELL, A. M., M. D., of Brooklyn, N. Y.

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The first thought which this title suggests to the unreflective mind is that it is in conflict with the almost universally popular belief that disease is an independent, active principle or entity, the result of sin—a penalty for the transgression of some physiological or sanitary law—which is identified with the punishment of our first parents for partaking of the forbidden fruit; a belief which, logically considered, without any conception of organic structure, would imply that man, as originally constituted, was intended to occupy this world forever.

That disease was unknown in the world before the fall of Adam, is only equally true with the statement that so was all knowledge of the concerns of mankind unknown.

It is not my purpose to analyze the sacred record with regard to such special manifestations and miracles as appear to have been adapted by the Creator to the comprehension of man in his primitive state, or to call in question their design; but to consider disease as an essential condition of life, instituted for a beneficent purpose.

I have so long entertained this belief and have had such frequent opportunities of testing its practical utility, that, to my mind, it now amounts to a thorough conviction.

For illustration: About thirty-five years ago I was called to a very sick child, about eight years old, the daughter of a learned, but exceedingly sensitive, clergyman. I found him in the room with the child, walking the floor and wringing his hands, and otherwise giving vent to his feelings by prayer; with frequent appeals to God to know why his dear child should be so stricken. "Oh, my God," he cried, "for what is this affliction sent—what has my darling child done that she should be called upon to suffer?" and by various similar expressions greatly disturbing to the patient and agonizing to himself.



I, of course, led him from the room and remonstrated with him, and had to repeat the process several times during the few days next following; but finally succeeded in excluding him altogether, until the child had well nigh recovered and he had become composed.

Some two or three months afterward, the reverend father, who, I had learned, was the editor of a church magazine, called upon me and requested me to be kind enough to write out in substance what he had learned from me of the nature of disease, and allow him to publish it. I made a conditional promise, and after a few weeks, I wrote out enough to make half a dozen printed pages, and without caption or signature, I sent it with a note: "Here is your baby, name it to suit yourself."

It appeared in his next issue under the title of "The Goodness of God Manifest in Disease."

This was in 1857. Three years subsequently I re-wrote the article and made it the concluding chapter of a little book called "Knowledge of Living Things," published by Bailliere Brothers, New York, 1860.

What follows, comprises the substance of those articles, in conjunction with more knowledge of the structure of the human organism and continued reflection upon the subject.

Every organized being and every organ and tissue of every such being, even the hairs and nails, and the most minute nerves after they are lost to view under the most powerful microscope, are now known to be composed and maintained by living cells. Each one of the cells thus incorporated is possessed of an individual life of its own, has a period of development and maturity, possesses the property of reproduction, and dies. Life presents itself in the-organism as the sum of these vital unities. It is maintained by the circulation of the blood, which is also for the most part composed of living cells; and the processes of organization and function are sustained, or otherwise, according to the conditions of the blood supply and of the organ or organism to which it is distributed. So that all irregular actions, disturbances and pains which follow, are just as much in accordance with the laws which govern the existence of a single cell, as if the cell relied on its own independent action. And all the changes that take place, whether favorable or unfavorable to the continuance of life, are based upon the same fundamental laws.

The cells exist before the being which they organize, and survive it after the play of its functions has been arrested, insomuch that the life of the organism throughout is the resultant of the life of the cells which constitute it; their individual existence being co-ordinated to subserve a perfectly definite object. When this co-ordination is interfered with, the result is disease. The favorable or unfavorable influences determine whether the already existing parts or cells persist, increase or diminish; whether the conditions necessary to the varied play of the organic functions remain, or whether the machinery of life is arrested by the change or cessation of these conditions.

The organism, like the cells of which it is constituted and by which it is maintained, has a period of development and growth; a period of middle life, in which the functions strive to maintain an unaltered mass; and an epoch of decrease or decline, which is concluded by natural death. It is only in accordance with these conditions that life is embodied.

The world was not made for man alone. His life is linked with the plants and animals which co-exist with him, and these are the issue of long anticipations and preparations.

Not only the comfort, health and the degree of civilization, but the very existence of mankind in any given locality, depends upon the state of the earth, the atmosphere of the earth, the climate of the earth, and the productions of the earth. He is placed in a system where all the changes produced in other objects occur according to a relation existing among the substances changed, and his own organization participates in all these things that surround him. He has been endowed with a degree of intelligence equal to the necessity of determining the relation of these things to his health and life, and what he ought to do for himself is as abundantly indicated by the knowledge of his organization and powers, as the uses of any machine is understood by an acquaintance with its construction.

The nature of the human organism is such that a most intricate connection is established between the organic functions, and this connection has a constant relation to the necessity of harmonizing the functions and keeping them in sympathy with each other.

The constant physical and chemical changes which accompany life depend upon the various reciprocities which are produced by the work of the different parts of the body. The assimilation of what is received, the elimination of that which is useless, and the restoration and maintenance of the organs by which these operations are effected.

We need no reasoning to convince us that an organism so curious and so wonderfully perfect in all its parts as the human body, was designed to continue as long as the material composing it and the conditions to which it is exposed will admit of, and that upon us devolves the duty of giving it that continuance.

The preservation of health is an incumbent duty. We must preserve it in its perfect state, that in which the powers of the constitution can be most effectually exerted. All the health and strength of which we are capable were intended for use; and any unfitness for the functions of life is a partial death, by a weakening of the compensating powers of the system. The life and activity of every part is merged into such a perfect organism, that all the organs composing it are united together in a bond of mutual dependence, and the complete performance of the entire series of actions is necessary for the healthy maintenance of any one action. All the functions are so completely bound up in each



other, that none of them can be suspended without seriously disturbing or causing the cessation of all the rest. Hence, if any one organ is diseased, all the other organs are embarrassed.

We are all so placed that there are very few of the objects surrounding us which may not be serviceable or hurtful; nor is that service to be obtained or injury avoided otherwise than by an acquaintance with things external, and their relations to our existence. The more exact our knowledge of this kind is, the more we lessen the calamities and add to the comforts of life

Our knowledge of external things wholly depends upon our sense perceptions. To our senses we trust directly, and by their cultivation we become acquainted with the relation of external things to health, and gain the power of increasing and varying the facts upon which we rely for guidance.

When the body is in full health and strength, the mind is so far assisted thereby that it can bear a closer and longer application. Apprehension is readier, imagination livelier, the compass of thought is more capable of enlargement, perceptions can be more quickly examined and more exactly compared, and a truer judgment can be formed. We can in all things have a clearer understanding of our relation to external things, of that which is best for us and of what is most for our interest, and thence determine our actions more readily, and persist therein with greater resolution and steadiness.

It is in this way that the soundness of the body is serviceable to the mind—each needs, each helps the other.

But the lifetime of man is perfectly consistent with the temporary existence of the cells of which his body is constituted and his relation to the conditions which surround him. Under the most favorable conditions, parts of his frame that are concerned in development unceasingly accumulate the necessary particles by a process as beautiful and systematic as it is mysterious and sublime; until, ultimately, the growth peculiar to the species and the individual is attained.

At this point the preponderance which before existed in the action of the exhalents over the absorbents ceases, and all is equality. Ere long his exhalants fall off in their wonted activity; the fluids decrease in quantity; the solids become more rigid; and all those changes supervene which characterize the decline of life.

But death may occur at any period of life, a few only ceasing to live by the effects of age alone. The duration of life varies according to numerous conditions and circumstances. The original constitution of the individual, the habits and occupations of life, locality and various other causes, some of which, accidental or otherwise, are inappreciable before their fatal effects are encountered.

Latitude, elevation, nature of the soil, degree of cultivation, relative position in regard to mountains, forests, rivers, etc., and general aspect

of the neighborhood, all modify the condition of man and prove his adaptability by such effects as serve to make him understand his relations to what is around him.

Man's relation to these things is known by their effects. And with the faculty of reason for his guide in the prosecution of his purpose, he continually risks the consequences of his free agency by fortifying himself against recognized conditions inimical to his health and life, or by boldly setting them at defiance in the irregularities of his conduct.

Disease in all its aspects is no less constant than the physical phenomena of the universe. The more attentively it is studied from the earliest records of it, to the present time, the more evident it appears that not a single one of the many diseases described in ancient or modern times has wholly disappeared, or that a single new one has been discovered. The same and all exist to-day, as ever have existed, and with equal liability to assert themselves under the same conditions as their wont at any period in their history.

The Divine institution of disease in relation to man's free agency and the qualities of natural phenomena suited to the whole organic world, requires that there should be more or less uncertainty and irregularity in its action. Diversity and dissimilarity are everywhere manifest, and not less so in disease and its results than in the classes, orders, genera and species of the animals and plants; individuals of the same species are not unfrequently very dissimilar.

Disease forms no exception to the Divine arrangement of natural phenomena. The beginning and end of human life are only steps in an eternal existence. Death is the completion of life, but if disease had no other purpose nor end than death, it would be an anomaly in the works of the Creator, as involving an arrangement of vitality without salutary tendencies. Like our own handiwork, which has in itself no provision for repair, we should wear out; labor and sorrow would be the end of all our days; life would be a burden, health beyond hope, and eternity a new creation.

The gratification which the reasoning faculties constantly seek, even if it involve a sacrifice of individual health, discloses truths of universal application. And as man tastes of the delights of intellectual action and gives way to the impulses of his nature to pursue them, he will see in disease a providential mercy to encourage his willing submission to it, and to mitigate its severity. As its pains are but temporary, he can find strength to bear them patiently, if not to welcome them in the thought of the enduring good which they are intended to work within him.

The uncertainty of the issue in any disease, however slight in the beginning, is evidence of its merciful object. Were it otherwise, were our bodies so constituted as never to be sick but unto death, how appalling and hopeless would be the condition of man—hardened in sin, by the

deliberate postponement of immortal concerns on account of the certainty of time! But the uncertain duration of, and occasional recovery from, even the most fatal diseases, guards and secures their fitness for the common purpose, and prevents them from being any exception to the Divine arrangement.

But let us go further and suppose disease to be of one kind only and always fatal at a particular period. Then the case would be much aggravated. A death-bed repentance would be the universal reliance, for while health continued there would be no concern for a future state. Feeling sure of time for the necessary preparation, convenience and necessity would take the place of duty, and the deceptions of weakness and bewilderment, instead of strength and clear perception in the full enjoyment of health and faculties, would determine the chances of eternity.

On the other hand, people sometimes die without the intervention of disease—are suddenly cut off in the full possession of health. But such deaths are rare and exceptions to the general rule. And how would it be if they were the rule instead of the exception? How indescribably dreadful would be the fear of certain, sudden death! The whole of life would consist in the dread of impending danger; pleasure would be unexperienced and unknown, and civilization among the things that are not.

Indeed, it is only by the present arrangement of disease that its Divine origin can be appreciated and its beneficence discerned. In any other way it would have no analogy to the diversity everywhere manifest in natural phenomena, nor would it serve the merciful purpose for which it was ordained.

Disease was not instituted simply as the road to death, or it would have been uniform and certain in its course. True happiness consists in the influence of religion, to which the whole of life should be devoted.

That fulness of communion which actuates the most kindly emotions, induces peace, inspires love and waits for heaven, is more or less the fruit of disease. It brings out and nourishes all the finest feelings of human nature. When strength is laid low and man is made to see and feel his dependence upon his fellowman, who that has watched and studied the motions of the faithful physician and seen the sympathy of his full heart overflow, lest through too much confidence in human aid the purpose of God may not be fully accomplished—who has seen this and not felt the benefit of the sick room? Or, again, when the surgeon has to take the responsibility of hazarding the most intense suffering with the least bare hope of relief from impending death; with what sympathy, what self-denying devotion, the wife, the mother, the sister, the friend, aye, the enemy even, and the most abandoned of mankind, all find their feelings softened under such circumstances. But again,



when disease appears in its most appalling aspect, and the heart of the nation is stirred by the advance of a fatal epidemic on a neglectful community, to keep itself fortified against such an event, but instead, is beset round-about with the most favorable conditions for the reception and propagation of such a disease, and the life of thousands, it may be, is made to depend upon the fortitude of the practical sanitarian who is called upon to defend such a community, until it can be aroused from its sleeping indifference and made to bestir itself by the use of its reason—who that has witnessed such scenes is not ready to confess that it is in mercy and not in wrath that God has sent disease into the world?

All conflict with this conclusion is removed by our Lord's blessed answer to the question, "Master, who did sin, this man or his parents, that he was born blind?"

"Neither hath this man sinned nor his parents, but that the works of God should be made manifest in him."

The apparent punishment of Azariah with leprosy for profanity, and of Gehazzi for covetousness and falsehood was in reality a correction in mercy. And in like manner were the punishments of the Israelites.

Disease is nowhere manifest as mere punishment, but as a correction in mercy for the salvation of the soul. Even when it is brought about by our own misconduct, it is consonant with this view, because we are admonished by it to be ready for death.

We are corrected against the imprudence committed for future improvement in ourselves, not punished that others may profit by our example, which is the true design of punishment. Moreover, as a general thing there is no connection between acts performed and disease. Indeed, if this were the case, we should find that the righteous and the wicked could be designated by their relative degree of health, and we should be constantly led to inquire, "who did sin, this man or his parents?"

It is conclusive that no manner of life can be alleged in justification of disease. From infancy to old age the innocent and the guilty are alike subject to its uncertainties.

The inherent aversion of man to live for the future needs a constant monitor.

There is no condition in which we are in so much danger of forgetting that an eternity awaits us as when we are in the uniform enjoyment of health. The purpose of disease may indeed be disregarded, unheeded; in which case the visitation will be unprofitable, as it was to the Philistines, but its purpose is not on this account altered. A thorough conviction of God's love and merciful providence in all His dispensations is the only adequate proof of a submissive spirit.

The benefit of disease is to be obtained by endeavoring to discover its nature, how it may have been avoided, and how its recurrence may

be prevented as long as possible, consistent with the human organism, and finally by a meek submission to the Divine will.

It is thus that the Creator, having designed man for a higher sphere, has not only given him the capacity of knowledge and virtue, but has instituted disease as a sentinel on the threshold of his future existence.

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### The Coroner System in the United States.

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By HENRY O. MARCY, M. D., of *Boston, Mass.*

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I am aware that the great body of the medical profession have regarded the coroner and his duties as a subject bearing only an indirect relation to the practice of medicine. It was not until 1877, when the coroner laws were pretty thoroughly investigated in Massachusetts, that I believe they demanded revision.

The investigation of the law as practiced in Massachusetts showed clearly that it was not adapted to the best ends of justice; that the coroner, no matter how skilled in any branch of special training, could, under the law, scarcely be expected to discharge his duties in a satisfactory manner. In other words, that the primal fault lay, not so much in the functionary as in the class of duties he was expected to fulfil. The analysis of these duties showed that the same person was expected to be competent as a medical expert, to serve as an administrator of the law, as a judge to hear evidence, to decide upon its admissibility, he being also a witness in the case. Upon his own authority, or assisted by a physician, he was first to determine in a case under investigation if death had occurred by natural means or by violence; that is, by the evil intent of another. It having been decided that further investigation was necessary, a jury was summoned, and testimony was taken, usually in open session. To this he added his own testimony.

From this brief review it will be clearly observed that the office demanded two entirely distinct classes of functions to be discharged by one and the same person. These duties were both legal and scientific, and each in turn might involve questions of the greatest magnitude, often requiring the highest skill and experience in two great branches of learning. A further investigation showed that in matter of fact the office was generally regarded as political, and that the appointees were more commonly men versed neither in law or medicine, and, as a consequence, were necessarily unfitted for the proper discharge of either of the main subdivisions of their duties. This was brought so clearly to the notice of the proper authorities that the manifest unfitness of the law for the complex requirements of modern life was plainly apparent,



and Massachusetts abolished her entire system of coroner laws, and established in their place provision for medical examinations and inquest in cases of death and violence. This reformation was accomplished under the leadership of Mr. Theodore H. Tyndale, a member of the Boston bar, with the active co-operation of several distinguished members of our own profession, aided by the state medical society, and the law which is here given in full was adopted by the Legislature of Massachusetts in May, 1877:

AN ACT to abolish the office of coroner, and to provide for medical examinations and inquest in cases of death by violence.

*Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:*

SECTION 1. The offices of coroner and special coroner are hereby abolished.

SECTION 2. The Governor shall nominate, and by and with advice and consent of the council shall appoint, in the county of Suffolk, not exceeding two, and in each county not exceeding the number to be designated by the county commissioners as hereinafter provided, able and discreet men, learned in the science of medicine, to be medical examiners; and every such nomination shall be made at least seven days prior to such appointment.

SECTION 3. In the county of Suffolk each medical examiner shall receive in full for all services performed by him an annual salary of three thousand dollars, to be paid quarterly from the treasury of said county; and in other counties they shall receive for a view without an autopsy, four dollars; for a view and autopsy, thirty dollars, and travel at the rate of five cents per mile to and from the place of the view.

SECTION 4. Medical examiners shall hold their offices for the term of seven years from the time of appointment, but shall be liable to removal from office at any time by the Governor and council for cause shown.

SECTION 5. Each medical examiner, before entering upon the duties of his office, shall be sworn and give bond, with sureties, in the sum of five hundred dollars, to the treasurer of the county, conditioned for the faithful performance of the duties of his office. If a medical examiner neglects or refuses to give bond as herein required, for the period of thirty days after his appointment, the same shall be void, and another shall be made instead thereof.

SECTION 6. The county commissioners in each county shall, as soon as may be after the passage of this act, divide their several counties into suitable districts for the appointment of one medical examiner in each district under this act; and when such division is made, shall at once certify their action to the Secretary of the Commonwealth, who shall lay such certificate before the Governor and council. But nothing herein shall prevent any medical examiner from acting as such in any part of his county.

SECTION 7. Medical examiners shall make examinations as hereinafter provided, upon the view of the dead bodies of such persons only as are supposed to have come to their death by violence.

SECTION 8. Whenever a medical examiner has notice that there has been found, or is lying within his county, the dead body of a person who is supposed to have come to his death by violence, he shall forthwith repair to the place where such body lies and take charge of the same; and if, on view thereof and personal inquiry into the cause and manner of the death, he deems a further examination necessary, he shall, upon being thereto authorized in writing by the district attorney, mayor, or selectmen of the district, city or town where such body lies, in the presence of two or more discreet persons, whose attendance he may compel by subpoena, if necessary, make an autopsy, and then and there carefully reduce or cause to be reduced to writing every fact and circumstance tending to show the condition of the body, and the cause and manner of death, together with the names and addresses of said witnesses, which record he shall subscribe. Before making such autopsy he shall call the attention of said witnesses to the position and appearance of the body.

SECTION 9. If, upon such view, personal inquiry or autopsy, he shall be of opinion that the death was caused by violence, he shall at once notify the district attorney and a justice of the district, police or municipal court for the district or city in which the body lies, or a trial justice, and shall file a duly attested copy of the record of his autopsy in such court, or with such justice, and a like copy with such district attorney; and shall in all cases certify to the clerk or registrar having the custody of the records of births, marriages and deaths in the city or town in which the person deceased came to his death, the name and residence of the person deceased, if known, or a description of his person as full as may be for identification, when the name and residence cannot be ascertained, together with the cause and manner in and by which the person deceased came to his death.

SECTION 10. The court or trial justice shall thereupon hold an inquest, which may be private, in which case any or all persons other than those required to be present by the provisions of this chapter may be excluded from the place where the same is held; and said court or trial justice may also direct the witnesses to be kept separate, so that they cannot converse with each other until they have been examined. The district attorney, or some person designated by him, may attend the inquest, and may examine all witnesses. An inquest shall be held in all cases of death by accident upon any railroad, and the district attorney or the Attorney General may direct an inquest to be held in the case of any other casualty from which the death of any person results, if, in his opinion, such inquest is necessary or expedient.

SECTION 11. The justice or district attorney may issue subpoenas for witnesses, returnable before such court or trial justice. The persons served with such process shall be allowed the same fees and their attendance may be enforced in the same manner and they shall be subject to the same penalties as if served with a subpoena in behalf of the commonwealth in a criminal prosecution pending in said court or before said trial justice.

SECTION 12. The presiding justice or trial justice shall, after hearing the testimony, draw up and sign a report in which he shall find and certify when, where, and by what means the person deceased came to his death, his name, if known, and all material circumstances attending his death; and if it appears that his death resulted wholly or in part from the unlawful act of any other person, he shall further state if known to him, the name of such person, and of any person whose unlawful act contributed to such death, which report he shall file with the records of the superior court in the county wherein the inquest is held.

SECTION 13. If the justice finds that murder, manslaughter or an assault has been committed, he may bind over as in criminal prosecutions, such witnesses as he deems necessary, or as the district attorney may designate, to appear and testify at the court in which an indictment for such offense may be found or presented.

SECTION 14. If a person charged by the report with the commission of any offense is not in custody, the justice shall forthwith issue process for his apprehension, and such process shall be made returnable before any court or magistrate having jurisdiction in the premises, who shall proceed therein in the manner required by law. But nothing herein shall prevent any justice from issuing such process before the finding of such report, if it be otherwise lawful to issue the same.

SECTION 15. If the medical examiner reports that the death was not caused by violence, and the district attorney or the Attorney General shall be of a contrary opinion, either the district attorney or the Attorney General may direct an inquest to be held in accordance with the provisions of this act, notwithstanding the report, at which inquest he, or some person designated by him, shall be present and examine all the witnesses.

SECTION 16. The medical examiner may, if he deems it necessary, call a chemist to aid in the examination of the body, or of substances supposed to have caused or contributed to the death, and such chemist shall be entitled to such compensation for his services as the medical examiner certifies to be just and reasonable, the same being audited and allowed in the manner herein provided. The clerk or amanuensis, if any, employed to reduce to writing the results of the medical examination or autopsy, shall be allowed for his services two dollars per day.

SECTION 17. When a medical examiner views or makes an examination of the dead body of a stranger, he shall cause the body to be decently



buried, and if he certifies that he has made careful inquiry, and that to the best of his knowledge and belief the person found dead is a stranger, having no settlement in any city or town of this commonwealth, his fees, with the actual expenses of burial, shall be paid from the treasury of the commonwealth. In all other cases the expense shall be paid by the city or town, and all other expenses by the county wherein the body is found.

SECTION 18. When services are rendered in bringing to land the dead body of a person found in any of the harbors, rivers or waters of the commonwealth, the medical examiner may allow such compensation for said services as he deems reasonable, but this provision shall not entitle any person to compensation for services rendered in searching for such dead body.

SECTION 19. In all cases arising under the provisions of this act, the medical examiner shall take charge of any money or other personal property of the deceased, found upon or near the body, and deliver the same to the person or persons entitled to its custody or possession; but if not claimed by such person within sixty days, then to a public administrator, to be administered upon according to law.

SECTION 20. Any medical examiner who shall fraudulently neglect or refuse to deliver such property to such person within three days after due demand upon him therefor, shall be punished by imprisonment in the jail or house of correction not exceeding two years, or by fine not exceeding five hundred dollars.

SECTION 21. The medical examiner shall return an account of the expenses of each view or autopsy, including his fees, to the county commissioners having jurisdiction over the place where the view or examination is held, or in the county of Suffolk to the auditor of the city of Boston, and shall annex thereto the written authority under which the autopsy was made. Such commissioners or auditor shall audit such accounts and certify to the treasurer of the commonwealth, or the treasurer of the county, as the case may be, what items therein are deemed just and reasonable, which shall be paid by said treasurer to the person entitled to receive the same.

SECTION 22. Whenever any sheriff is a party to a suit or proceeding, or otherwise disqualified to act therein, the sheriff, or a deputy sheriff, of any adjoining county may serve and execute all writs and precepts, and perform all duties of such sheriff which he is disqualified to perform, and may serve and execute all such writs and precepts wherein any county, town, parish, religious society or school district is a party or interested, notwithstanding he is at the time a member of such corporation.

SECTION 23. Whenever a vacancy occurs in the office of sheriff of any county, the senior deputy sheriff in service shall perform all the duties required by law to be performed by the sheriff, until the office of

sheriff is filled in the manner required by law, giving bond as now required by law of sheriffs. And in case of such vacancy, the deputies of the sheriff vacating the office shall continue to have and exercise the power of deputy sheriffs until said office is filled as aforesaid.

SECTION 24. Sections seventy-five, seventy-six and seventy-seven of chapter seventeen, and section one hundred of chapter sixty-three, and section eighteen of chapter one hundred and sixty-three of the general statutes are hereby amended by substituting for the word "coroner," wherever the same occurs, the words "medical examiner," and for the word "coroners," the words, "medical examiners." The second clause of section fifty-two, and sections seventy-four, seventy-eight, seventy-nine and eighty of chapter seventeen of the general statutes, chapter one hundred and seventy-five of the general statutes, chapter one hundred and thirteen of the acts of year eighteen hundred and sixty-one, chapter one hundred and seventy-two of the acts of the year eighteen hundred and sixty-two, chapter twenty-eight of the acts of the year eighteen hundred and sixty-four, chapter two hundred and forty-one of the acts of the year eighteen hundred and seventy-one, and chapter one hundred and fifteen of the acts of the year eighteen hundred and seventy-six, and all other acts and parts of acts inconsistent herewith are hereby repealed.

SECTION 25. For the purposes of the appointment and qualification of medical examiners and the action of the county commissioners herein provided for, this act shall take effect upon its passage, and it shall take full effect on the first day of July next.

We shall have occasion to revert to the experience of Massachusetts during the last thirteen years to show the advantages in the working of the new law. Suffice it to state in passing, that the radical changes made in this act are: first, the doing away entirely with the office of coroner; second, the abandonment of examination by a jury on what is necessarily a preliminary trial; third, the adoption of a new plan by which a specially trained medical expert makes a scientific investigation, and properly qualified legal officials conduct the legal inquiry, preliminary to the final trial after indictment of the accused parties.

In 1881, Dr. John G. Lee, of Philadelphia, published a book entitled "Hand-book for Coroners," containing a digest of all the coroner laws in the United States. This valuable work consists of the selection, collation and arrangement of such material as the author could command, and is offered especially "as a guide for the instruction of newly elected coroners, or as a convenient hand-book for occasional and rapid reference." It does not appear to the author that any especial criticism should be made upon the laws as collated, or that there is an imperative need of a radical revision of the same. He recognizes, however, that there is often a difficulty of proper adjustment of the relation which the coroner holds to the prosecuting attorney and the other departments of



justice, and concludes by saying: "If the coroner will administer his office fearlessly and according to the laws of his state, we feel sure that the clamor which periodically demands the abolition of the coroner and his functions will be heard no more."

However, the impartial critic who studies at all carefully the coroner laws as they exist in the several states would seem to require no better evidence of the need of their revision than therein contained, and as if in emphasis of this conclusion, the author adds a considerable number of pages of anecdotes full of grim humor which would be high comedy were it not for the seriousness of the subject.

In 1887 a committee was appointed by the American Medical Association, of which I was chairman, to examine into and report upon the coroner system of the United States. The first report of this committee was made at the May meeting, in 1888, supplemented by a report at the annual meetings of 1889 and 1890. At the last meeting a resolution was adopted in the general session calling the attention of the various state and district societies to this subject, requesting the members of the association to personally investigate and as far as possible to correct the evils inherent in the present system.

I desire by this paper to enlist the interest of the profession generally in this subject, as one eminently suitable for their investigation, and I sincerely trust that the influence of this learned body may be exercised in behalf of a much needed reform. It had been my purpose to examine in detail the laws in effect in each of the several states and territories, and to this end I entered into correspondence with the secretaries of the various boards of health, and other prominent officials, and I have, as the result therefrom, collected a large amount of valuable material. However, the limit of this paper prevents an analysis in detail. The essential principles of the coroner laws (except in Massachusetts, Connecticut and Rhode Island) are very similar in all the states, and it is a source of absolute wonder how such an absurd and valueless office for the detection of crime should have continued through all these years.

These laws owe their origin very naturally to the laws of England, and were first adopted in the early colonial days. The conservatism of English thought is nowhere better exemplified than in the history of her legal enactments. The primary medico-legal inquiry in cases of death by violence has been conducted in England by the coroner's inquest for the last thousand years, and has not been essentially changed for several centuries. According to Sir Thomas Smith, who wrote in 1583, the name of the office originated from the word "Crownor," or "Coromator," because "the death of every subject by violence is accounted to touch the Crowne, and to be a detriment to it; in other words, the coroner was a representative of the Crown." The system of trial by jury has ever been very dear to the English heart, and this, in the earlier days of English history, when society was less complex than

at present, was very properly associated with the duties of the coroner system. Then both pathology and chemistry were in their infancy, and the combined judgment of the average citizen represented the highest verdict of public opinion.

In the early part of the present century, Mr. Thomas Wakeley, the able editor of the London *Lancet*, pointed out the inefficiency of the coroner laws as practiced in England, and demanded that the office of coroner should be filled by a competent medical man, since which time the coroner in England has usually been selected from among the better class of medical practitioners.

At the present time, in nearly all the states of the Union, the coroner's office is considered one of political preferment, and as such, is subject to party politics, holding the office not seldom as a subsidy for supposed services rendered, rather than because of fitness to discharge duties of so great importance to the state.

In the progress of legal learning, as well as in medical science, these two great branches of special knowledge have outgrown their former status, and to be well versed in both is beyond the training and education of the present generation.

The object of a medico-legal inquiry is manifestly the detection of crime, and the evidence sought is the direct cause of death and the identity of the individuals committing the crime. To ascertain the cause of death, it often requires the highest qualification of a pathological expert. The post-mortem examination must often be made in a thorough and skilful manner, and must frequently be supplemented by a careful and exhaustive chemical research. To this portion of the subject an especially trained medical expert limits his inquiry. Here, in the large majority of cases requiring investigation, the examination should end, since by it, it is clearly determined that death has been due to natural causes, and that the case does not come within the limit of criminal investigation. In such cases, at least, it is useless and unnecessary expense to summon jurymen, and too often calls the attention of the public through the press to a subject keenly painful to all parties involved.

If death has not occurred from natural causes, the question then arises, has a crime been committed? In all doubtful cases, the evidence of this is largely determined by a careful, competent and thorough medical examination. When this has been fairly established, the further investigation of the relation of "the party or parties to the act" becomes a purely legal one, and here, singularly, the evidence, as usually rendered by the verdict of a coroner's jury, is generally considered of little value. In an able article\* by Mr. Clark Bell, of New York, entitled "The Coroner's Office; Should it be Abolished?" he writes: "There can probably be no more startling evidence of the utter uselessness of a

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\* The *Medico-Legal Journal*, September, 1890.

coroner's jury than the statement of this fact, that whatever may be the verdict in a given case, the subsequent indictment, trial and entire judicial proceeding is absolutely independent of it, and proceeds as if the coroner's jury had never acted at all. \* \* \*

"We cannot be too jealous of the right of trial by jury, but in all cases under existing law two juries must agree before any person can be convicted of crime, without counting the coroner's jury, viz: The grand jury which presents the indictment, and the jury in the trial of the accused after indictment; so that the abolition of the jury on the preliminary inquiry and a change as to who shall make the inquest in its stead, is not in any sense true an infringement upon the right of trial by jury which in all cases would exist if the proposed change was made."

Under the coroner system, as in actual use in the various states, much time is frequently lost by reversing what seems the proper order of procedure. A jury is summoned, witnesses are heard, and at last it is determined that a post-mortem examination is necessary, and yet it is often of the greatest importance that the autopsy be promptly made before decomposition is pronounced.

In a subject the fundamental principles of which are of universal application, it may be well to broaden the inquiry as to the methods adopted by the great nations of Europe which cover the important duties relegated to the coroner's inquest in England and America. For an excellent *resumé* of the same, I take pleasure in making reference to the valuable articles of Mr. Bell from which I have just quoted.

#### FRANCE.

In France two distinct and separate officers take charge of all medico-legal investigations. The legal officer, attorney of the republic, is an authority not unlike the district attorney of our states. He makes a record of evidence, has the power of seizing articles or papers if connected with crime, and can temporarily hold in durance suspected persons. He may employ detectives, and is held responsible for all the legal questions involved. The scientific investigation is under the charge of a competent medical expert, especially selected for the office, who has full power, and is held responsible for a careful scientific investigation.

#### GERMANY.

The present law of the German Empire was adopted in 1879. The judicial officer (*staatsanwalt*) is called the district attorney. The police are his subordinates as officers of the law in the investigation of crime. They are obliged to report to this officer all cases of sudden death or death by violence, and no interment of the body is allowed until after the consent has been obtained from this officer or a competent court. Medical examinations are made by experts especially selected for this purpose, who are summoned by the above mentioned authorities, and they in all respects conduct the examination. Upon the evidence of the



preliminary examination, the district attorney enters suit before a competent court.

#### SCOTLAND.

The law in Scotland is analogous to that of France.

#### GREECE.

The system in force in Greece is almost identical with that of France. A medical officer takes exclusive charge of the medical question of the examination, and detectives or experts trained to the business are subject to the call of the prosecuting officer.

#### RUSSIA.

The officer designated in charge of the medico-legal examinations is known as judge of the institute; is an officer of the crown, appointed in and for each district by the central governor or council of the province or state. He is possessed of large powers, and may even place in close confinement an accused or suspected person. The medical side of the case is in charge of a physician who is a salaried officer under the crown. He conducts autopsies, and carefully reduces his examination and conclusions to writing, which he furnishes to the court, and also to the central medical council, or board, held in every province at the seat of the government, who have a power of review of the same in case doubt exists.

In 1883 a new law was enacted in Connecticut, appointing a properly qualified attorney as a coroner for each county, and a medical examiner for each town. I quote briefly from a letter written me upon the subject by Dr. M. C. White, medical examiner for New Haven: "One feature of our new law, giving all the business of the county to one lawyer, secures immediate investigation by an experienced officer who understands law and the best methods of examining witnesses. \* \* \* He must investigate immediately all suspicious cases. He may call a jury. All this works admirably. Three-fourths of all the sudden, violent or untimely deaths are disposed of by the medical examiners, reported and recorded, but require no legal investigation, since there is no suspicion of crime. \* \* \* After nearly five years' experience under the present law, I think the defects or questionable points are so few that we may say there is very general satisfaction with the law."

Rhode Island somewhat recently passed laws similar to those of Massachusetts, and Dr. Charles H. Fisher, secretary of the State Board of Health, writes me "that it is a great improvement upon the preceding law and methods."

I am indebted to Dr. Samuel W. Abbott, the efficient secretary of the Massachusetts Board of Health, for most valuable information upon the working of the law as enforced in this state since 1877. I take pleasure

in referring to a valuable article published by Dr. Abbott in the *Forum* for 1889, entitled "The Defects of the Coroner System." Under the new régime, about 15,000 cases of death from sudden, suspicious, violent or unknown causes have been investigated in a manner much more satisfactory than was possible under the old system. "Another important feature of the new method of procedure is the decided lessening of expense. Under the coroner system the cost of executing the law for three years (1874, 1875, 1876) was found to be \$63,712.04, and under the new law it was \$54,509.31 for the three years (1878, 1879, 1880), a decrease of \$9,202.73, or more than three thousand dollars per year, notwithstanding an increase in the population of about eight per cent. The principal reasons for this diminished expense are found in the abolition of the jury, and in the decrease in the number of inquests. The ratio of inquests to cases investigated under the old law was forty per cent., while under the present law for the period of eleven years (1877-1888) it has been but twenty per cent., or half as many."

In review of the celebrated Barron case, in Maine, which created a wide interest outside of the state, Dr. Abbott wrote a valuable criticism, from which I quote. In the trial of one Stain, as having committed the murder, the chief question of interest was the uncertainty as to the exact cause of death. "The cashier of the Dexter bank was found dead in the vault of the bank under suspicious circumstances. Marks of violence were found upon his head. Two theories were advanced, and the little community of Dexter became divided as to the question of murder or suicide. What would have been the most reasonable course to pursue under such circumstances? An immediate and thorough examination of the body, especially of the brain and stomach, would undoubtedly have settled the question of murder or suicide at once.

"What was actually done? The good-natured coroner (to use the words of the account printed at the time of the affair) deferred to the wishes of the family, and *made no autopsy*. Then came the farce of a coroner's jury. Six men sat in a solemn conclave and pronounced a verdict, and of what possible value was the verdict?"

From the advanced sheets of the report of the State Board of Health, Dr. Abbott furnishes me the following statistical table:

#### EXPENSES OF MEDICAL EXAMINATION FOR 1889.

The total expenses of the medical examinations for the year 1889, including the cost of registration, was \$19,489.69. The average cost of each of the 1,654 medical examinations was \$11.78. In Bristol, Essex, Hampden, Hampshire and Middlesex the expense was greater, and in the remaining counties it was less, than that of the previous year.



The expenses of the five years, 1885-1889, were as follows:

| YEAR.           | Total number of cases examined. | Autopsies. | Total expenses. | Average expense of each case. |
|-----------------|---------------------------------|------------|-----------------|-------------------------------|
| 1885, . . . . . | 1,260                           | 165        | \$16,322 54     | \$12 95                       |
| 1886, . . . . . | 1,378                           | 202        | 18,024 22       | 13 08                         |
| 1887, . . . . . | 1,556                           | 188        | 18,626 26       | 11 97                         |
| 1888, . . . . . | 1,651                           | 219        | 19,611 53       | 11 88                         |
| 1889, . . . . . | 1,654                           | 216        | 19,489 69       | 11 78                         |

In the following itemized table are presented the expenses of conducting the medical examinations in each county and for the whole state for the year 1888:

*Expenses incurred in conducting the medical examinations required by the medical examiner laws of Massachusetts—1889.*

| COUNTIES.               | Number of cases. | Autopsies. | Fees of medical examiners. | Mileage. | Witnesses and clerks. | Chemists and other experts. | Burial, removal, recovery and care of bodies. | Incidentals. | Totals.     |
|-------------------------|------------------|------------|----------------------------|----------|-----------------------|-----------------------------|-----------------------------------------------|--------------|-------------|
| Barnstable, . . . . .   | 13               | 6          | \$65 00                    | \$27 10  | ..                    | ..                          | \$6 00                                        | \$0 95       | \$99 05     |
| Berkshire, . . . . .    | 51               | 6          | 405 00                     | 42 40    | \$41 00               | \$50 00                     | 15 00                                         | 12 50        | 565 90      |
| Bristol, . . . . .      | 132              | 7          | 835 00                     | 59 40    | 58 00                 | 160 00                      | 26 00                                         | 10 40        | 1,148 80    |
| Dukes, . . . . .        | 4                | ..         | 20 00                      | 3 30     | 6 00                  | ..                          | ..                                            | ..           | 29 30       |
| Essex, . . . . .        | 208              | 16         | 1,415 00                   | 82 70    | 106 00                | 100 00                      | 23 50                                         | 10 00        | 1,737 20    |
| Franklin, . . . . .     | 15               | ..         | 75 00                      | 24 30    | ..                    | ..                          | ..                                            | ..           | 99 30       |
| Hampden, . . . . .      | 126              | 14         | 980 00                     | 77 60    | 134 00                | 435 00                      | 217 00                                        | 31 50        | 1,875 10    |
| Hampshire, . . . . .    | 24               | 5          | 245 00                     | 36 99    | 18 00                 | ..                          | 7 00                                          | ..           | 306 99      |
| Middlesex, . . . . .    | 275              | 19         | 1,855 00                   | 174 55   | 136 00                | 50 00                       | 124 00                                        | ..           | 2,539 55    |
| Nantucket, . . . . .    | 2                | ..         | 10 00                      | ..       | ..                    | ..                          | ..                                            | ..           | 10 00       |
| Norfolk, . . . . .      | 84               | 8          | 620 00                     | 51 65    | 72 80                 | 50 00                       | 12 50                                         | ..           | 806 95      |
| Plymouth, . . . . .     | 39               | 4          | 295 00                     | 57 30    | 17 50                 | ..                          | ..                                            | 6 00         | 375 80      |
| Suffolk, . . . . .      | 533              | 125        | 6,500 00                   | 169 60   | 970 00                | 275 00                      | 562 75                                        | ..           | 8,477 25    |
| Worcester, . . . . .    | 152              | 12         | 1,060 00                   | 115 10   | 113 00                | ..                          | 100 50                                        | ..           | 1,388 60    |
| Totals, . . . . .       | 1,654            | 216        | \$14,380 00                | \$921 89 | \$1,672 30            | \$1,120 00                  | \$1,064 25                                    | \$71 35      | \$19,259 79 |
| Registration, . . . . . | ..               | ..         | ..                         | ..       | ..                    | ..                          | ..                                            | ..           | 229 90      |
|                         |                  |            |                            |          |                       |                             |                                               |              | \$19 489 69 |

In evidence of the great value of the working of the new law in Massachusetts, I quote from an exhaustive article upon the subject, "The Abolition of the Coroner in Massachusetts," by T. H. Tyndale, Esq.:\* "With the abolition of the composite functionary and of the jury, a highly-trained class of 'medical examiners,' an office gladly accepted by the first physicians in the state, we open the door for special interest in, and previously unknown penetration into fields of detailed investigation of pathology; we have laid the foundation of a valuable body of observed facts, as shown by the publication of our medico-legal transactions, contributed entirely by the medical examiners; we have attained accuracy, and we have never, since the passage of the medical examiner act, failed in a single prosecution for want or insuf-

\*The Medico-Legal Journal, March, 1890.

ficient clearness of the medical testimony. The previous statistics were, some hundreds of inquests annually—some tens of convictions. Now the great majority of prosecutions begin with the skilful investigation of trained men, acting promptly and delayed by no cumbersome, meaningless machinery, and end in convictions. \* \* \* We have attained that greatest deterrent of crime, the chief terror to criminals—swiftness in discovery and certainty in punishment.

Incidentally, a gain dear to the lover of social cleanliness and morality has been obtained. I refer to the total disappearance from the press, except as news from other states, of the nauseous and offensive details formerly furnished by the coroner's inquest and eagerly sought after by the prurient curiosity-mongers. These changes have been wrought by a simple act, abolishing the office of coroner and appointing for Boston two, for each other county in the state some four, medical examiners whose business is solely the physical examination and subsequent giving of testimony. \* \* \* The new system has now been in operation about twelve years and has proved itself capable of exact and valuable work; no instance of wilful dereliction of duty under it has taken place. It has now the commendation of judges, prosecuting officers and the general public, and may fairly be pronounced a step in the direction of purifying the public service."

The limit of time at my disposal prevents a more detailed discussion of a subject of such vast importance, and in closing I desire to commend for earnest consideration in each of the several states the following propositions:

1. To abolish the office of coroner.
2. To dispense with jury service.
3. To separate the medical from the legal duties in all cases involving the examination into the causes of death where crime is suspected.
4. To entrust the medical examination only to competent medical officers properly trained in their work.
5. To make the number of these medical officers as small as consistent with the proper discharge of their duties.
6. To consign all questions of law only to properly qualified legal magistrates.
7. To remove the appointment of these officers entirely from the question of political consideration, and to be based only upon their possession of the requisite and proper qualifications.

Upon some basis of this character should the coroner's laws be revised. Much useless expenditure of time and money will be avoided, often great sorrow and anxiety will be prevented, and that which is of vastly greater importance—the ends of justice—will be far better served.

### Sickness and Mortality in the Army of the United States.

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By JOS. R. SMITH, A. M., M. D., *Colonel and Surgeon, U. S. Army, Medical Director Department of Arizona.*

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All statistics telling the amount of disease and death in any considerable portion of the community, and showing the variations in said amount from year to year, seem properly to belong to state medicine.

As there is no section of military medicine and surgery in the American Medical Association, I deem it proper to present to the section on state medicine the following paper, in which I have collated and compared figures showing the absolute and relative amount of disease, death, and non-effectiveness in the army of the United States.

While these statistics have been collected under conditions of considerable uniformity from year to year, yet it is to be remarked that they have been collected by a large number of observers, all of them medical officers of education and intelligence, yet each differing from the other in powers of observation, and in mental characteristics or peculiarities.

To some this last-named fact will make the statistics more reliable and valuable than if they had been collated and reported by a single individual; to others less reliable and valuable.

In 1882 I presented to the American Medical Association a paper which was printed in its transactions, and contained the health statistics of the United States army for eleven years—from 1871 to 1881, inclusive.

I now present similar data from the annual reports of the surgeon general for a period of nine years, from 1882 to 1889 inclusive.

TABLE I, *Showing the sickness and mortality from disease in the army of the United States during the years 1882-1889, inclusive.*

| YEAR ENDING.                                        | Cases per M. of mean strength reported as taken on sick report for disease. |          |        | Deaths from disease per M. of mean strength. |          |        | Deaths from disease per M. of cases of disease treated. |          |        |
|-----------------------------------------------------|-----------------------------------------------------------------------------|----------|--------|----------------------------------------------|----------|--------|---------------------------------------------------------|----------|--------|
|                                                     | White.                                                                      | Colored. | Total. | White.                                       | Colored. | Total. | White.                                                  | Colored. | Total. |
| June 30, 1882, . . . . .                            | 1,461                                                                       | 1,537    | 1,468  | 6.79                                         | 7.06     | 6.81   | 4.65                                                    | 4.60     | 4.64   |
| June 30, 1883, . . . . .                            | 1,570                                                                       | 1,620    | 1,575  | 6.98                                         | 6.28     | 6.91   | 4.45                                                    | 3.87     | 4.39   |
| June 30, 1884, . . . . .                            | 1,583                                                                       | 1,558    | 1,580  | 8.80                                         | 6.50     | 8.56   | 5.56                                                    | 4.17     | 5.42   |
| December 31, 1884, . . . .                          | 1,236                                                                       | 1,458    | 1,257  | 7.27                                         | 9.15     | 7.45   | 5.88                                                    | 6.28     | 5.92   |
| December 31, 1885, . . . .                          | 1,110                                                                       | 1,203    | 1,118  | 4.92                                         | 3.19     | 4.76   | 4.43                                                    | 2.65     | 4.26   |
| December 31, 1886, . . . .                          | 1,017                                                                       | 1,236    | 1,036  | 6.53                                         | 4.67     | 6.36   | 6.43                                                    | 3.78     | 6.14   |
| December 31, 1887, . . . .                          | 992                                                                         | 1,094    | 1,002  | 6.02                                         | 8.48     | 6.25   | 6.06                                                    | 7.76     | 6.24   |
| December 31, 1888, . . . .                          | 1,013                                                                       | 1,164    | 1,028  | 6.05                                         | 11.59    | 6.59   | 5.97                                                    | 9.95     | 6.41   |
| December 31, 1889, . . . .                          | 1,073                                                                       | 997      | 1,066  | 3.98                                         | 7.45     | 4.32   | 3.71                                                    | 7.47     | 4.05   |
| Total for whole period of nine years, . .           | 1,222                                                                       | 1,319    | 1,231  | 6.33                                         | 7.20     | 6.42   | 5.18                                                    | 5.47     | 5.21   |
| Total in former reports for eleven years, . . . . . | 1,551                                                                       | 1,498    | 1,546  | 8.45                                         | 11.40    | 8.71   | 5.45                                                    | 7.61     | 5.63   |

The number taken sick or dying from disease, and the number constantly sick at different times, are both, in their own way, measures of the health of an army; each has its own peculiar value.

The difference between the numbers admitted on sick report for disease in the two periods tabulated in 1882 and now, might be due to difference of physique of the soldiers, to differences in the nature of their service and the differences in the sanitary care and attention bestowed upon them.

So far as can be discovered, the material in both periods was about the same; the nature of the service was unchanged. So, reasoning by exclusion, better sanitary care and attention must have been mainly or entirely operative in causing the decrease of numbers taken sick during the period 1882 to 1889 inclusive.

Differences in the ratios of those dying from disease (not injury) per 1,000 of mean strength, might be due to these above-named causes, and, in addition, to a difference in the character or constitution of each individual disease, and to better therapeutics.

As before, the first two causes may be excluded. A difference in the character of the diseases has not been proved or even asserted; rest, the improvements in sanitation and therapeutics, as the effective factors.

The difference in the ratio of those dying from disease per 1,000 of cases of disease, would seem, besides the above-named causes, specially due to either a difference in the character of the disease; that is, a



greater or less tendency to death, or to better treatment, these two being either combined or complementary; one more efficient as the other is less so.

The importance of the ratios of constant non-effectiveness as a measure of comparative health, was first emphasized by the surgeon general of the army in his report for 1888. The writer of the pages in that report, on the health of the army as a whole, says: "The actual impairment of force which the army suffers on account of sickness, as well as the relative importance of the various causes of sickness, cannot be measured with any degree of accuracy by the number of admissions to sick report, but they are shown very clearly by the aggregate loss of time which these admissions individually and collectively cause, and from this aggregate the average non-effectiveness can be accurately and readily determined."

So it is desirable to consider these data, and I have accordingly constructed a new table, containing figures relating to non-effectiveness. I have also added the ratios of "deaths from all causes," the foregoing tables including only those from disease. It is apparent that the difference between the ratios of deaths from disease and deaths from all causes, is the ratio of deaths from injury, violence, etc.

I have deemed it best also to add the figures for some years preceding 1871—and I have commenced with 1867, because during that year the army was reduced from a war to a peace footing, and because in that year appeared first the statistics of average of mean strength (termed in the reports "average" for the years 1867, 1868, 1869, 1886, 1887, 1888 and 1889, and "average mean" for other years), the number taken on sick report for disease, the number taken on sick report for injury, the mortality, and the constant sickness rate, all for whites and blacks separately, for the fiscal year ending June 30, to which year the rest of the report refers. Similar data have appeared in each annual report since, until 1885.

In the annual report dated October 1, 1885, and subsequent annual reports of the surgeon general, while the rest of the report refers to the previous fiscal year, ending June 30, the health statistics relate to the calendar year next preceding.

This and subsequent reports also fail to give the constant sickness rates for disease and injury separately. No reason was given for these changes, nor is one apparent which is entirely satisfactory.

In consequence of them, accurate, rigorous comparison is prevented between figures of preceding and subsequent reports, and the report referred to embraces statistics for six months common to it and the previous report.

Consequent on these omissions, my table does not contain the non-effective rates for disease and injury separately, but the rate for both combined.



This same report of the surgeon general, for the first time gives data as to the number of days' service lost in consequence of admissions to sick report.

Explanatory of some of the figures in these tables, the text of the reports of the Surgeon General states that 1,310 deaths from cholera occurred in 1867.

That cholera and yellow fever combined caused 681 deaths in 1868, and that yellow fever to a limited extent occurred in 1869, 1874, 1875, 1876, 1877, 1878, 1883 and 1884.

The text states that for the year 1870, "the comparatively large mortality from wounds, accidents and injuries, is explained by the Indian hostilities;" and it shows the same in 1876, to be mainly due to the Custer massacre.

For the year ending June 30, 1884, the text reads: "It is interesting to note that not only is this the lowest death-rate yet reached among colored troops since their organization, but it is the first time that the rate has fallen lower than that for white troops, the usual average difference being 3.2 per thousand of mean strength in favor of the latter class."

For the year 1885, the text says: "It is a matter of congratulation that not only the admission rate for the troops, but also the death-rate has fallen to a lower point than at any time within the history of the medical department."

I remark here that my tables show that, for the succeeding years 1886, 1887, 1888 and 1889, the admission rates, though not the death-rates, for all causes, were still lower.

TABLE II.

| YEAR ENDING        | Ratio per M. of mean strength, admitted for disease. |          |        | Ratio of deaths from disease, per M. of mean strength. |          |        | Ratio of deaths from all causes, per M. of mean strength. |          |        | Ratio of deaths from all causes, per M. of mean strength. |          |        | Ratio constantly sick, per M. of mean strength. |          |        |
|--------------------|------------------------------------------------------|----------|--------|--------------------------------------------------------|----------|--------|-----------------------------------------------------------|----------|--------|-----------------------------------------------------------|----------|--------|-------------------------------------------------|----------|--------|
|                    | White.                                               | Colored. | Total. | White.                                                 | Colored. | Total. | White.                                                    | Colored. | Total. | White.                                                    | Colored. | Total. | White.                                          | Colored. | Total. |
|                    |                                                      |          |        |                                                        |          |        |                                                           |          |        |                                                           |          |        |                                                 |          |        |
| June 30, 1867.     | 2,717                                                | 2,865    | 2,737  | 37.15                                                  | 114.46   | 47.79  | 13.68                                                     | 39.95    | 17.46  | 40.92                                                     | 120.71   | 51.90  | 58.90                                           | 45.90    | 57.90  |
| June 30, 1868.     | 2,628                                                | 2,838    | 2,648  | 25.96                                                  | 50.69    | 28.32  | 9.88                                                      | 17.86    | 10.70  | 29.90                                                     | 56.14    | 32.40  | 63.02                                           | 59.28    | 62.06  |
| June 30, 1869.     | 2,920                                                | 2,859    | 2,272  | 9.89                                                   | 10.17    | 10.47  | 4.26                                                      | 6.81     | 4.48   | 12.85                                                     | 17.59    | 13.34  | 58.17                                           | 52.78    | 57.61  |
| June 30, 1870.     | 1,853                                                | 1,008    | 1,829  | 4.63                                                   | 14.97    | 9.25   | 4.63                                                      | 9.31     | 5.06   | 12.89                                                     | 19.37    | 13.57  | 48.89                                           | 49.25    | 49.25  |
| June 30, 1871.     | 1,853                                                | 1,137    | 1,804  | 12.36                                                  | 10.74    | 12.23  | 6.63                                                      | 9.44     | 6.78   | 17.07                                                     | 18.89    | 17.77  | 50.40                                           | 39.88    | 49.54  |
| June 30, 1872.     | 1,675                                                | 1,438    | 1,844  | 13.44                                                  | 18.24    | 10.62  | 6.63                                                      | 14.37    | 7.22   | 15.23                                                     | 21.65    | 15.83  | 50.40                                           | 49.63    | 49.63  |
| June 30, 1873.     | 1,666                                                | 1,438    | 1,844  | 9.92                                                   | 18.24    | 10.62  | 6.63                                                      | 14.37    | 7.22   | 15.23                                                     | 21.65    | 15.83  | 50.40                                           | 49.63    | 49.63  |
| June 30, 1874.     | 1,514                                                | 1,539    | 1,515  | 8.92                                                   | 10.01    | 9.02   | 5.80                                                      | 6.51     | 5.45   | 13.30                                                     | 17.82    | 13.43  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1875.     | 1,420                                                | 1,417    | 1,419  | 7.39                                                   | 13.34    | 7.95   | 5.21                                                      | 9.42     | 5.60   | 10.92                                                     | 16.47    | 11.43  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1876.     | 1,499                                                | 1,469    | 1,496  | 8.30                                                   | 7.99     | 8.28   | 5.54                                                      | 5.44     | 5.53   | 23.80                                                     | 12.90    | 22.87  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1877.     | 1,482                                                | 1,821    | 1,510  | 7.73                                                   | 7.23     | 7.69   | 5.21                                                      | 3.97     | 4.75   | 11.17                                                     | 15.42    | 11.51  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1878.     | 1,270                                                | 1,007    | 1,298  | 5.82                                                   | 10.03    | 6.17   | 4.58                                                      | 6.24     | 4.75   | 12.31                                                     | 16.89    | 12.69  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1879.     | 1,505                                                | 1,775    | 1,527  | 7.46                                                   | 7.70     | 7.48   | 4.95                                                      | 4.34     | 4.75   | 12.31                                                     | 16.89    | 12.69  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1880.     | 1,519                                                | 1,512    | 1,518  | 5.70                                                   | 8.87     | 6.01   | 3.75                                                      | 5.86     | 3.96   | 9.91                                                      | 19.43    | 10.83  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1881.     | 1,513                                                | 1,745    | 1,536  | 6.14                                                   | 11.09    | 6.64   | 4.06                                                      | 4.69     | 4.64   | 10.40                                                     | 11.04    | 10.49  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1882.     | 1,570                                                | 1,620    | 1,595  | 6.98                                                   | 6.26     | 6.61   | 4.75                                                      | 4.75     | 4.75   | 10.40                                                     | 11.04    | 10.49  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1883.     | 1,583                                                | 1,558    | 1,580  | 8.80                                                   | 6.50     | 8.56   | 5.58                                                      | 6.17     | 5.42   | 12.36                                                     | 13.07    | 10.94  | 46.40                                           | 48.41    | 48.01  |
| June 30, 1884.     | 1,236                                                | 1,458    | 1,257  | 7.27                                                   | 9.15     | 7.45   | 5.88                                                      | 6.28     | 4.26   | 7.66                                                      | 6.38     | 7.54   | 46.40                                           | 48.41    | 48.01  |
| December 31, 1884. | 1,110                                                | 1,203    | 1,118  | 4.92                                                   | 3.19     | 4.76   | 4.43                                                      | 4.68     | 6.14   | 9.04                                                      | 7.94     | 9.76   | 46.40                                           | 48.41    | 48.01  |
| December 31, 1885. | 1,017                                                | 1,036    | 1,036  | 6.53                                                   | 4.67     | 6.36   | 3.78                                                      | 6.43     | 8.70   | 11.61                                                     | 8.98     | 11.61  | 46.40                                           | 48.41    | 48.01  |
| December 31, 1886. | 992                                                  | 1,004    | 1,002  | 6.02                                                   | 8.48     | 6.25   | 6.06                                                      | 7.76     | 6.23   | 8.70                                                      | 11.61    | 8.98   | 46.40                                           | 48.41    | 48.01  |
| December 31, 1887. | 1,013                                                | 1,161    | 1,028  | 6.05                                                   | 11.50    | 6.59   | 5.97                                                      | 9.95     | 6.41   | 8.70                                                      | 11.61    | 8.98   | 46.40                                           | 48.41    | 48.01  |
| December 31, 1888. | 1,073                                                | 997      | 1,066  | 3.98                                                   | 7.45     | 4.82   | 3.71                                                      | 7.47     | 4.05   | 6.55                                                      | 10.34    | 6.92   | 46.40                                           | 48.41    | 48.01  |

TABLE III.

| YEAR ENDING                                  | Ratio per M. of mean strength, admitted for disease. |          |        | Ratio of deaths from disease, per M. of mean strength. |          |        | Ratio of deaths from all causes, per M. of mean strength. |          |        | Ratio of deaths from all causes, per M. of mean strength. |          |        | Ratio constantly sick, per M. of mean strength. |          |        |
|----------------------------------------------|------------------------------------------------------|----------|--------|--------------------------------------------------------|----------|--------|-----------------------------------------------------------|----------|--------|-----------------------------------------------------------|----------|--------|-------------------------------------------------|----------|--------|
|                                              | White.                                               | Colored. | Total. | White.                                                 | Colored. | Total. | White.                                                    | Colored. | Total. | White.                                                    | Colored. | Total. | White.                                          | Colored. | Total. |
|                                              |                                                      |          |        |                                                        |          |        |                                                           |          |        |                                                           |          |        |                                                 |          |        |
| For the four years, 1867 to 1870, inclusive. | 2,420                                                | 2,107    | 2,427  | 21.78                                                  | 57.57    | 26.78  | 8.96                                                      | 24.00    | 10.62  | 25.51                                                     | 63.19    | 29.69  | 9.43                                            | 24.31    | 11.02  |
| For eleven years, 1871 to 1881, inclusive.   | 1,551                                                | 1,498    | 1,546  | 8.45                                                   | 11.40    | 8.71   | 5.45                                                      | 7.61     | 5.63   | 14.01                                                     | 17.08    | 14.34  | 7.72                                            | 10.15    | 7.93   |
| For nine years, 1882 to 1889, inclusive.     | 1,222                                                | 1,319    | 1,231  | 6.33                                                   | 7.20     | 6.42   | 5.18                                                      | 5.47     | 5.21   | 9.36                                                      | 10.69    | 9.49   | 6.40                                            | 6.61     | 6.43   |
| For whole period of twenty-four years.       | 1,667                                                | 1,708    | 1,671  | 11.14                                                  | 23.69    | 12.35  | 6.68                                                      | 13.87    | 7.39   | 15.42                                                     | 28.82    | 16.72  | 8.02                                            | 14.74    | 8.67   |

In the report for the year ending December 31, 1884, the text of the report of the Surgeon General mentions the "mean strength" obtained from the reports of the Adjutant General of the Army, which varies from the "mean strength" obtained from the reports of medical officers from which all preceding rates had been calculated. The text says that the death and discharge rates in these tables, so calculated, are "higher than they should be," as the figures given by medical officers do not embrace the whole strength of the army. The subject was only considered of enough importance to be mentioned in a foot note merely, and it is so mentioned in a foot-note in the report of the ensuing year.

In the report for 1886, the matter is more fully treated of, and the difference between the two "mean strengths" is fully recognized, that given by medical officers being generally the smaller.

The reason is shown why the "mean strength" reported by the Adjutant General is the proper strength from which to calculate ratios of deaths and discharges, and these ratios are, in the 1886 and subsequent reports, calculated from the figures of the Adjutant General, while rates of admission and non-effectiveness are calculated from the figures of mean strength given by medical officers—the same is the case for succeeding years.

It may here be remarked that, from many points of view, this report of 1886 shows a distinct advance beyond its predecessors.

It is manifest that for purposes of comparison within themselves, the ratios of all reports must be calculated on similar data, and those data given.

As the data given in the reports before 1886 will not enable us to calculate ratios for these years on the figures of the Adjutant General, I have used for the ratios of every year in Tables II and III, the figures given by medical officers.

The exact difference between these two "mean strengths" appears below, the figures being taken from all the annual reports of the Surgeon General which give such figures.

Since 1883, I have given much attention to the question of the correct mean strength of the army. For many military posts, month after month, I have compared the figures in the reports of the Adjutant General, the figures given by medical officers, and the actual numbers on which these figures are based. It would take too much space to give all the grounds for my convictions, which I therefore merely recite, as follows.

As stated in the text of the report of the Surgeon General for 1886, the figures in the report of the Adjutant General are the proper data on which to compute ratios of deaths and discharges.

But neither the mean strength given by the Adjutant General, nor that obtained from reports of medical officers, are correct for the calculation of ratios of admission and constant sickness.

The figures of the post surgeon should be the basis with certain ad-

ditions which have been habitually omitted, but which may be easily ascertained and which may in the future be supplied.

## MEAN STRENGTH OF ARMY.

| YEAR.           | WHITE.                   |                                 | COLORED.               |                                 | TOTAL.                 |                                 |
|-----------------|--------------------------|---------------------------------|------------------------|---------------------------------|------------------------|---------------------------------|
|                 | By returns from A. G. O. | By reports of medical officers. | By returns of A. G. O. | By reports of medical officers. | By returns of A. G. O. | By reports of medical officers. |
| 1884, . . . . . |                          |                                 |                        |                                 | 26, 124                | 24, 033                         |
| 1885, . . . . . |                          |                                 |                        |                                 | 26, 542                | 24, 138                         |
| 1886, . . . . . | 23, 737                  | 21, 430                         | 2, 358                 | 2, 142                          | 26, 095                | 23, 572                         |
| 1887, . . . . . | 23, 937                  | 21, 601                         | 2, 428                 | 2, 240                          | 26, 365                | 23, 841                         |
| 1888, . . . . . | 24, 103                  | 22, 310                         | 2, 636                 | 2, 416                          | 26, 739                | 24, 726                         |
| 1889, . . . . . | 24, 723                  | 22, 591                         | 2, 610                 | 2, 417                          | 27, 333                | 25, 008                         |

The difference in the ratios computed from these main strengths is given below:

| YEAR.           | Ratio admitted for disease by figures, from returns of medical officers, <i>vide</i> Table II. | Same per returns from A. G. O. | Ratio of deaths per M. of mean strength, from reports of medical officers, <i>vide</i> Table II. | Same from returns from A. G. O. | Ratio of deaths from all causes per M. of mean strength, calculated from reports of medical officers, <i>vide</i> Table II. | Same from returns from A. G. O. | Constantly sick, from reports of medical officers, <i>vide</i> Table II. | Same from returns from A. G. O. |
|-----------------|------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------|---------------------------------|
| 1884, . . . . . | 1, 257                                                                                         | 1, 157                         | 7.45                                                                                             | 6.85                            | 10.94                                                                                                                       | 10.02                           | 44.48                                                                    | 40.92                           |
| 1885, . . . . . | 1, 118                                                                                         | 1, 017                         | 4.76                                                                                             | 4.33                            | 7.54                                                                                                                        | 6.86                            | 41.06                                                                    | 37.34                           |
| 1886, . . . . . | 1, 036                                                                                         | 936                            | 6.36                                                                                             | 5.75                            | 9.76                                                                                                                        | 8.81                            | 39.41                                                                    | 35.60                           |
| 1887, . . . . . | 1, 002                                                                                         | 906                            | 6.25                                                                                             | 5.65                            | 8.98                                                                                                                        | 8.12                            | 42.36                                                                    | 38.31                           |
| 1888, . . . . . | 1, 028                                                                                         | 950                            | 6.59                                                                                             | 6.09                            | 8.82                                                                                                                        | 8.15                            | 41.90                                                                    | 38.74                           |
| 1889, . . . . . | 1, 066                                                                                         | 976                            | 4.32                                                                                             | 3.95                            | 6.92                                                                                                                        | 6.33                            | 44.11                                                                    | 40.34                           |

In consequence of using the figures given by post surgeons, without the corrections above indicated, for comparison with the statistics of other armies, all the ratios in Tables II and III are too high; and the amount of correction should be probably in accordance with the figures immediately preceding, which show the differences as computed by the different mean strengths.



In the report of the Surgeon General for the year ending June 30, 1884, the number of cases of typhoid fever is given in the different arms of the service, and among recruits and older soldiers. No attempt is made to explain the differing conditions of these different arms; and as it will hardly be supposed that typhoid fever favors a man simply because he is a cavalry or artillery man, the remarks under this head are not of very great significance.

Elsewhere remarks are made as to the greater or less prevalence of this disease at various posts, where more or less unsanitary condition is also treated of.

The next annual report, 1885, again mentions the greater prevalence of the disease among cavalry men, and gives further details about the posts where prevalent.

Data are also given as to age and length of service of those affected.

In the same report appear tables to show the influence on mortality of rank, age, arm of service, race and nationality, and season of the year; also the relation of discharges for disability to arm of service, age and season.

Data of a similar nature, more or less complete, appear in all subsequent reports.

The text of the report for 1889 speaks of the death rate as the lowest annual death rate in the history of the army, and makes pertinent comment on the effect produced by the number of discharges for disability on certain other health statistics of the army.

On critical examination of the figures in Tables II and III, it will be evident, that taking for a measure the admission ratios on account of diseases exclusive of injury, the figures are most favorable for the black troops for the period of four years, 1868-70 inclusive, and the period of eleven years, 1871-81 inclusive, but most favorable for the white troops for the period of nine years, 1882-9 inclusive, and the period of the whole twenty-four years.

Taking for our measure the mortality ratios the figures are most favorable for the white troops for each and every period given separately in Table III.

Taking for our measure the non-effective rate the figures are slightly in favor of the whites for nine years, 1882-9 inclusive, and much more in favor of the blacks for all the other periods.

It farther appears that the death rates are more nearly equal for whites and blacks in the latter period of nine years, 1882-9 inclusive, than in the preceding two periods. That is to say, the blacks are overtaking the whites in the race of which longevity is the goal.

As regards the admission ratios for disease and the ratios for non-effectiveness, the white troops in the last period of nine years have overtaken and a little passed the blacks.

For obvious reasons, the general deductions from the figures relating



to longer periods of service are more valuable than those from the figures relating to individual years; yet attention may be called to the fact that for the last year, 1889, the admission rate for disease and that for constant sickness are in favor of the black troops; while the mortality rates are considerably in favor of the white troops, while in general, the year, as regards vital statistics, was one of the best in the army's history.

It will be further noticed that the indications from admission rate for disease, mortality rate, and constant sickness rate, are unanimously in favor of any one color, but for seven years of the 24, viz: in 1874, 1878, 1881, 1885, 1887 and 1888, in favor of the white; in 1884 in favor of the black troops.

For about three-quarters of the years given, the health of the white troops has been the best, as measured by rate of admission for disease and death rate.

Measured by rate of non-effectiveness, the white troops have been less affected by disease than the blacks for twelve years, and the blacks less than the whites for twelve years.

The maximum admission rate for disease among the whites, viz: 27.17 per thousand of mean strength, occurred in 1867; the minimum, 992, in 1887.

The maximum of the same rate among the colored troops, 28.65 per thousand, occurred in 1868; the minimum, 997, in 1889.

The maximum death rate per thousand of mean strength among the white troops, viz: 37.15 occurred in 1867; the minimum 3.98, in 1887.

The maximum for the same rate among the colored troops, viz: 114.46 per thousand, occurred in 1867; the minimum, 3.19, in 1885.

The maximum of non-effectiveness among the white troops, viz: 63.02 per thousand, occurred in 1868; the minimum, 39.01 per thousand, in 1886.

The maximum of the same among colored troops, 59.28 per thousand, occurred in 1868; the minimum, 37.58, in 1880.

The maximum death rate for disease per thousand of cases of disease treated among the whites, viz: 13.68 per thousand, occurred in 1867; the minimum, 3.71, in 1889.

The maximum of same ratio among colored troops, viz: 39.95 per thousand, occurred in 1867; the minimum, 2.65, in 1885.

I am unable in the reports of the Surgeon General or elsewhere to find facts reported which adequately explain all the fluctuations in the figures of Tables II and III, and without further remark I offer the foregoing figures and comments to the students of army and other vital statistics, only adding that the figures given point unmistakably to the conclusion, that in the latter series of years tabulated, the amount of sickness and mortality was less than in the former series.

## The Duty of the Government in the Prevention of Tuberculosis.

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We read in the Declaration of Independence of the United States, "We hold these truths to be self-evident, that all men are created equal; that they are endowed by their Creator with certain unalienable rights; that among these are life, liberty and the pursuit of happiness. That, to secure these rights, governments are instituted among men." \* \* \*

\* \* \* All governments, indeed, which have been constituted upon the principles laid down in the great Magna Charta, have, as one of their foremost duties, the preservation of the lives and health of the people. The common law of England sums up the rights of individuals under three principal articles, namely: "The right of personal security, the right of personal liberty, and the right of private property;" and defines the right of personal security to consist, "in a person's legal right and uninterrupted enjoyment of his life, his limbs, his health and his reputation."

In the earlier days of civilization, many diseases were looked upon as providential visitations, and therefore non-preventable. In the common law of England, however, the principle that the government is bound to take every possible precaution against the spread of disease is well defined, not only indirectly by declaring for the preservation of life and health, but directly by providing penalties for persons offending against public health, or spreading such diseases as were then looked upon as contagious. The common law of England is operative in principle in most of the states of our Union; and its provision for life and health are affirmed in the constitution of probably most of the states. Section one of the Constitution of Pennsylvania reads: "All men are born equally free and independent, and have certain inherent and indefeasable rights, among which are those of enjoying and defending life and liberty," etc. The words "defending life" must be given a broader interpretation than mere defense against the anger of a fellowman. A reasonable interpretation makes it a defense against every danger to life for which the ingenuity of man has constructed a defense.

Modern science teaches us that many of the diseases which were formerly looked upon as divine visitations, are but ordinary warfares between various forms of organic life for self-existence; and that when death ensues, it is the going under of the weakest and the survival of the fittest. Man, the most perfect and the most intelligent of all of God's creatures, falls a victim to the onslaughts of organisms so minute that they can only be seen by the aid of most powerful lenses. What these little warriors lack in size they make up in number, and in their great

power of reproduction and multiplication. The organism of man, so perfect in its construction, so complex in its machinery, and so complete in its equipment for defensive warfare against parasitic vegetation, ought never to prove the weakest in a contest with organisms so primitive in construction as are disease germs. But the tiniest and the simplest organism becomes a power when acting in concert with a large enough number of organisms of its own kind. There is a law in nature that the smaller and more primitive an organism, the more rapid its reproduction, and in pursuance of this law, disease germs, when they once gain entrance into proper soil, multiply so rapidly that the mechanical obstruction of their presence in itself becomes a menace. It is in this their great numbers that they become great and prove themselves the victors in the contest for survival.

Ever since man has inhabited the earth he has bethought himself of ways and means to escape and overcome disease. The accumulated thought and ingenuity of centuries has at last demonstrated to us how some diseases can at least be avoided. We now not only know that disease is mostly due to a living organism, but of some diseases we have learned enough about the organism that we can lay down pretty definite rules as to how to circumvent its development. We know what kind of soil it needs, how it is transplanted from person to person, or from persons to animals, and from animals to persons, what will readily destroy it outside of its host, how it is influenced by temperature and moisture, etc. We know, in fact, how we can prevent it from propagating any longer among us, and thus drive it entirely from our midst.

Of all diseases, the one concerning which we have this knowledge with the greatest accuracy, is tuberculosis. So dreadful has been the onslaught of this disease upon the human family that in all ages, from the days of Hippocrates down to the present, some of the brightest minds the world has produced have devoted themselves to the study of its cure and prevention. The question of its cure has not yet been satisfactorily solved, but that of its prevention has been made as clear as any problem in mathematics. We know positively that the propagation of the disease germ depends upon the contamination of the well by the sick. We know also that this contamination can only take place in a certain way, namely through the medium of broken-down tubercular tissue. We know further, that the disease germ can very readily be destroyed in this broken-down tissue before it is able to reach a new host, and that if this is done the propagation of the disease will be stopped. The question of the prevention of tuberculosis, therefore, resolves itself into a question of how the broken-down tubercular tissue given off by hundreds of thousands of persons and animals, laboring under the disease, can be destroyed before it has an opportunity of reaching and infecting others. The practical solution of this question can only be accomplished by the government.



In most of the European governments, in harmony with their political institutions, there are national boards of health with many dependent subordinate boards, to which is entrusted the care for the health of the people. Under our American form of government this system is not practicable, but we could have United States and state boards of health, which would act in harmony, and to each of which certain duties would naturally fall. There is no more reason why we should not have such boards of health, than there is, why we should not have United States and state courts. We have state boards of health in most of the states, but we have none in the United States. Not only should we have a department of health in the United States, but it should be made compulsory on every state to have such a department. The contract between the people and the government cannot and will not be carried out until the machinery for such departments has been constructed and put into operation.

The duties which would fall to a United States department of health in the prevention of tuberculosis, and which cannot be performed by a state department, are the prevention of the importation of the disease from foreign countries and the carrying of it from state to state by commerce and travel. No immigrants should be allowed to enter our ports who are suffering from tuberculosis. Where such have been carried it should be seen that the ship which has carried them is properly disinfected, or at least that our own people be warned against traveling in that ship unless it is so disinfected. A thorough system of disinfection should be practiced, under the supervision of the United States, on the coast vessels plying between north and south, all of which carry a large number of consumptives. All interstate railway travel should be kept under surveillance by the United States government, and railway companies should be compelled to provide a complete system of disinfection of all apartments occupied by persons suffering from tuberculosis. The transportation of tuberculous animals or tuberculous meat should be entirely prohibited.

In addition to these duties for the prevention of tuberculosis, which are incumbent upon the United States, because they cannot be performed by the states, there are others in which the Federal government is co-sharer with the state government. The Constitution of the United States gives congress power to "lay and collect taxes, duties, impost, and excises, to pay debts and provide for the common defense, and general welfare of the United States." \* \* \* Under the power thus given the United States maintains an army and navy, and marine hospital service, army and navy hospitals, and educational institutions for the training of soldiers and sailors. Under the same power it could and ought to maintain a department of health, hospitals for the isolation and treatment of tuberculosis, and scientific institutions in which the disease could be studied and men given a practical training in methods of prevention.

Our people have as much right to be protected against a disease which is known to be preventable as against a foreign foe.

To the state falls the lion's share of the duty in the prevention of tuberculosis. Every state in the Union should have a department of health, with subordinate departments in every county of the state. It ought to be the duty of this body to keep a record of every case of tuberculosis in the state, and of every movement of such case. Physicians ought, therefore, to be required to report every case of tuberculosis immediately upon discovery. When a case has been reported a competent officer of the state should at once be sent to the family to instruct them how to protect themselves against the disease. If they are too poor to supply themselves with the necessary means of self-protection, such means should be supplied to them, or they should be induced to remove the sick member to a special hospital for treatment. In order that sufficient opportunity be given for the tuberculous poor to be properly treated for the disease, the state ought to maintain well equipped special hospitals in various parts of the state of convenient access. Whenever a case of tuberculosis removes from a house, or dies, the state should at once, before the house can be occupied by another, thoroughly disinfect every part of it, scrape and replaster the room which was occupied by the patient, and take precautions that none of the clothing or furniture which had been used by the patient be given away or left for the use of others without first having been thoroughly disinfected. A house thus cleansed should be so recorded in the office of the department, so that any one wishing to move into it may be able to first assure himself that he runs no risk.\* The state should also forbid and restrain the sale of food contaminated with the disease germ of tuberculosis. All slaughter houses and dairies should be inspected by competent men, and all tuberculous meat, and tuberculous milk-cows be condemned and redeemed by the state. No persons suffering from tuberculosis should be allowed to follow any avocation, in which he can contaminate the food, the implements or the wearing apparel of another. To obviate any hardships, every person suffering from tuberculosis, who is compelled to support a family, or who has anyone depending upon him, should for the time being become a pensioner of the state to the amount of his wages. Inasmuch as he gives up his earnings for the good of the public, it is but just and proper that he be supported as well as those depending upon him, at the expense of the public. I know that this will be cried down as expensive, and by some even as useless. That it would be expensive I admit; but I cannot help but feel that our present knowledge of tuberculosis will satisfy every one who will take the trouble to study the question, and whose mind is not preoccupied by a pet theory of his own, that such preventive measures would wipe out the disease.

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\*For this thought I am indebted to my friend, J. V. P. Turner, registrar of the Philadelphia board of health.



As regards the expense, the government, both federal and state, is not only justified, but is bound, by the very contract upon which it is based, to protect the people against preventable disease. All the purposes for which government is constituted may be briefly summed up under *life and its continuation for the allotted length of time without endangerment by violence or disease*. Every act of rational man is unconsciously tinted by a motive for unmolested existence. Our very physical construction is framed with this in view. Nature lets us suffer pain to indicate to us that life or limb is in danger. We have feelings of well being to show that all is right. All happiness, indeed, is dependent for its existence upon a feeling of security against danger to life. We seek to be at liberty, because we fear that restraint may prejudice our existence or that of those who are dear to us, or may place us in a position where at some time or at another we might not be able to protect ourselves or them. We seek to possess property in order that we can always supply the wants of nature to ourselves and those dependent upon us, and that we and they can refrain from exertions when our bodies need rest. In short the pursuit of happiness may be tersely defined as the chase of the foes of life. The question of expense can, therefore, hardly be allowed to be brought forward as an argument against any preventive measures against tuberculosis. Whatever the expense might be, however, it would certainly be very small as compared to what would be saved to the people by an avoidance of the disease, even though the question of the preservation of life were left out. The return for the expenditure in the way of individual and public prosperity would amply compensate for the outlay.

It is estimated that one hundred thousand people die annually from tuberculosis in the United States.† It is well known that the largest number of victims are taken during the first half of ordinary life. Making a due allowance for the number who, being saved from tuberculosis, might fall a victim to accident or some non-preventable disease, it would, I think, be a fair estimate to assume that the average number of years of usefulness lost by each of these one hundred thousand people is ten years. We then lose every year by tuberculosis the earning capacity of one million people for one year, which, put down in dollars and cents, at the low estimate of an average earning capacity for each individual of three hundred dollars a year, would amount to three hundred million dollars. Tuberculosis is, moreover, usually a chronic disease, and of long duration. At a very low estimate, the average length of time for which a tuberculous patient is incapacitated for work before death, may be placed at six months, during which time the earning capacity of one other member of the family is at least crippled because of nursing and care required by the sick one. In this way the earning capacity of from

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†Address on Phthisis Pulmonalis by Wm. M. Collum, M. D., Journal American Medical Association, vol. xvi, page 361.

fifty to a hundred thousand people more, for one year, is sacrificed and lost to public wealth. To the loss of time must be added the expenses incidental to sickness, which, if they averaged but fifty dollars for each sick person, would amount to five million dollars a year. It will be very apparent to every one that I have placed all my estimates too low; but even with these low estimates, the annual loss to the public wealth of the United States because of the existence of tuberculosis will reach close on to five hundred million dollars. The expenditure of one-fifth of that amount by the federal and state governments for the extermination of the disease, would completely wipe out the disease in a single generation.

I am fully aware that there are men in the medical profession, and prominent men too, who still hold that tuberculosis is not a preventable disease, and who cry down any preventive measures on the part of the government as a useless waste of public money. If there is any doubt on the part of the government on this question, it is certainly its duty to appoint a commission to carefully examine into the question and clear up the doubt one way or another. Either tuberculosis is a preventable disease or it is not. If it is a preventable disease, the government is in duty bound to prevent it, just as much as it is bound to protect its citizens against war. The finger of science points to the fact that tuberculosis is a preventable disease. Can our government afford to wait until every skeptic in the land has been convinced that it is preventable? No; its duty begins in the very beginning, with the scientific research into the preventability of the disease, and does not end until its citizens can walk this noble land for threescore and ten years, unmolested in health, life and limb by aught that can be brought under the domain and control of man.

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#### The Disinfection of Excreta.

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The committee on disinfectants appointed by the American Public Health Association in 1884, in its final report submitted in 1887, gives the following *general directions* :

“*Disinfection of Excreta, etc.*—The infectious character of the dejections of patients suffering from cholera and from typhoid fever is well established, and this is true of mild cases and of the earliest stages of these diseases as well as of severe and fatal cases. It is probable that epidemic dysentery, tuberculosis, and perhaps diphtheria, yellow fever, scarlet fever, and typhus fever, may also be transmitted by means of the

alvine discharges of the sick. It is, therefore, of the first importance that these should be disinfected. In cholera, diphtheria, yellow fever, and scarlet fever, all vomited material should also be looked upon as infectious. And in tuberculosis, diphtheria, scarlet fever and infectious pneumonia, the sputa of the sick should be disinfected or destroyed by fire. It seems advisable also to treat the urine of patients sick with an infectious disease with one of the disinfecting solutions below recommended.

"Chloride of lime, or bleaching powder, is perhaps entitled to the first place for disinfecting excreta, on account of the rapidity of its action.

"The following standard solution is recommended :

"*Dissolve chloride of lime of the best quality,\* in pure water, in the proportion of six ounces to the gallon.* Use one quart of this solution for the disinfection of each discharge in cholera, typhoid fever, etc.† Mix well and leave in the vessel for at least one hour before throwing into privy vault or water closet.

"The same directions apply to the disinfection of vomited matters. Infected sputum should be discharged directly into a cup half full of the solution. A five per cent. solution of carbolic acid may be used instead of the chloride of lime solution, the time of exposure to the action of the disinfectant being four hours." (Op. cit., pp. 237, 238).

The object of this paper is to inquire whether these recommendations, which were based upon the experimental data available at the time they were made, are sustained by subsequent investigations ; and whether any other agents have been shown to possess superior advantages for the purpose in view.

But first we desire to call attention to another portion of the report of the committee on disinfectants. On page 236 the following definition of disinfection and disinfectants is given :

"The object of disinfection is to prevent the extension of infectious diseases by destroying the specific infectious material which gives rise to them. This is accomplished by the use of disinfectants. There can be no partial disinfection of such material ; either its infecting power is destroyed or it is not. In the latter case there is a failure to disinfect. *Nor can there be any disinfection in the absence of infectious material.*"

I have italicised the last sentence because I wish to call especial attention to it. I am frequently asked "what is the best disinfectant to put into a water closet?" Now if a closet or privy vault is resorted to only by healthy persons and no infectious material has been thrown into it there is nothing in it to disinfect, and the recommendation of the com-

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\* Good chloride of lime should contain at least 25 per cent. of available chlorine (page 92). It may be purchased by the quantity at 3½ cents per pound. The cost of the standard solution recommended is therefore but little more than a cent a gallon. A clear solution may be obtained by filtration or by decantation, but the insoluble sediment does no harm and this is an unnecessary refinement.

† For a very copious discharge use a larger quantity.



mittee on disinfectants does not apply to it at all. It may smell badly, and in this case the bad odor may be neutralized by the use of deodorants; or we may prevent putrefactive decomposition of its contents and thus prevent the formation of the offensive gases given off as a result of such decomposition, by the use of antiseptics. But to accomplish this it is not necessary to sterilize the entire contents by the use of active germicide agents.

A solution of sulphate of iron or of chloride of zinc is an useful antiseptic and deodorizing agent, and the committee on disinfectants in making its recommendation did not intend to discourage the use of such agents. But exact experimental data showed that these agents could not be depended upon for the destruction of infectious disease germs, and the recommendation made related to disinfection in the strict and proper use of the term as above defined. This definition is now accepted by sanitarians in all parts of the world, but many practicing physicians still use the term disinfectant as synonymous with deodorant. For example, I find in a recent sanitary periodical under the heading "Medical Excerpt," an item copied from the *American Journal of Obstetrics*, to which the name of a distinguished gynecologist is attached, in which the following statement is made with reference to a much-advertised so-called "disinfectant:" "As a disinfectant I have used it in my house for over a year with great satisfaction." Now the agent referred to has been proved by exact experiments to have comparatively little disinfecting power, although it is a very good deodorant. According to our definition "the object of disinfection is to prevent the extension of infectious diseases by destroying the specific infectious material which gives rise to them." Are we to suppose that the distinguished gynecologist above quoted had such infectious material in his house "for over a year" at the time he was employing "with great satisfaction" the agent he recommends? If not, the term was improperly employed for "there can be no disinfection in the absence of infectious material." I wish to emphasize this point because I have reason to believe that, in the army at least, the recommendation of the committee on disinfectants has led to the substitution of chloride of lime for cheaper deodorants and antiseptic agents—and especially for sulphate of iron—in latrines which are frequented only by healthy persons and consequently need no disinfection. The amount of chloride of lime issued from the Medical Purveying Depot at San Francisco during the past six months for use at military posts on the Pacific coast, is more than double the amount of sulphate of iron; but there has been no epidemic of an infectious disease, and probably comparatively little call for the use of a disinfecting agent in the sick room. We quote again from the report of the committee on disinfectants:

"In the sick room we have disease germs at an advantage, for we know where to find them as well as how to kill them. Having this knowledge,

not to apply it would be criminal negligence, for our efforts to restrict the extension of infectious diseases must depend largely upon the proper use of disinfectants in the sick room." (Op. cit., p. 237.)

"The injurious consequences which are likely to result from such misapprehensions and misuse of the word disinfectant, will be appreciated when it is known that recent researches have demonstrated that many of the agents which have been found useful as deodorizers or as antiseptics, are entirely without value for the destruction of disease germs.

"This is true, for example, as regards the sulphate of iron or copperas, a salt which has been extensively used with the idea that it is a valuable disinfectant. As a matter of fact, sulphate of iron in saturated solution does not destroy the vitality of disease germs or the infecting power of material containing them. This salt is, nevertheless, a very valuable antiseptic, and its low price makes it one of the most available agents for the arrest of putrefactive decomposition." (Op. cit., p. 237.)

Chloride of lime is also a valuable antiseptic and deodorant, and I know of no objection to substituting it for sulphate of iron other than the question of cost. The first cost of chloride of lime by the quantity, is about double that of sulphate of iron, but practically, the difference is much greater because it is necessary to preserve the chloride of lime in air-tight packages. When exposed to the air it deteriorates in value very rapidly. It is therefore necessary to pack it in air-tight receptacles, which will not be injured by the corrosive action of free chloride, and in comparatively small quantities, so that the contents of a package may be used soon after it is opened.

We now proceed to consider the experimental data relating to the germicide value of *chloride of lime*.

The committee on disinfectants gave it "the first place for disinfecting excreta on account of the rapidity of its action." This recommendation was upon experimental data obtained in the pathological laboratory of the Johns Hopkins University, under the writer's direction, and is sustained by more recent experiments made in Germany.

The experiments of Bolton, made for the committee on disinfectants in 1886, gave the following results: The time of exposure being two hours the typhoid bacillus and cholera spirillum in bouillon cultures were killed by a solution containing one part to 1000 parts of water (containing 0.03 per cent. of available chlorine). Anthrax spores were killed in the same time by a solution, containing 0.3 per cent. of available chlorine. Typhoid feces were sterilized by a two per cent. solution, and in several instances by a one-half per cent. solution, but some resistant spores of non-pathogenic bacilli survived in two experiments in which a solution of 1.100 was used. In bouillon cultures to which 10 per cent. of dried egg albumen had been added, the typhoid bacillus was destroyed one-half per cent. (1 : 200).



Nissen, whose experiments were made in Koch's laboratory in 1890, found that anthrax spores were destroyed in thirty minutes by a 5 per cent. solution and in seventy minutes by a 1 per cent. solution. In his experiments the typhoid bacillus and the cholera spirillum were destroyed with certainty in five minutes by a solution containing 0.12 per cent. (1 : 833); the anthrax bacillus in one minute by 1 : 1000; staphylococcus pyogenes aureus in one minute by 1 : 500. Experiments made by the same author on the sterilization of fæces showed that 1 per cent. could be relied upon to destroy the bacillus of typhoid fever and the spirillum of cholera in fæces in ten minutes.

*Carbolic acid.*—The committee on disinfectants says: "A five per cent. solution of carbolic acid may be used instead of the chloride of lime solution, the time of exposure to the action of the disinfectant being four hours." This recommendation is made in view of the fact that in those diseases in which it is most important to disinfect the excreta, the specific germ does not form spores. This is now believed to be true of the typhoid bacillus, the spirillum of cholera, the bacillus of diphtheria, the bacillus of glanders, and the streptococcus of erysipelas; and it has been shown by exact experiments that all of these pathogenic bacteria are destroyed in two hours by a one per cent. solution, or less, of this agent.

Spores require for their destruction a stronger solution and a longer time. Koch found a one per cent. solution to be without effect on anthrax spores after fifteen days exposure; a two per cent. solution retarded their development, but did not destroy their vitality in seven days; a three per cent. solution was effective in two days. According to Nocht, at a temperature of 37.50 C., anthrax spores are killed by a five per cent. solution in three hours.

Carbolic acid possesses the advantage of not being neutralized by the substances found in excreta, or by the presence of albumen. Thus Bolton found that the addition of ten per cent. of dried albumen to a bouillon culture of the typhoid bacillus did not materially influence the result, the bacillus being destroyed in two hours by a one per cent. solution.

This agent, then, is firmly established as a valuable disinfectant for excreta, but we still give the preference to the standard solution of chloride of lime of the committee on disinfectants for use in the sick room, "on account of the rapidity of its action," and also on account of its comparative cheapness.

At the International Sanitary Conference of Rome (1885) the writer, who was associated with Dr. Koch on the committee on disinfectants, presented the claims of chloride of lime, and in the recommendations of the committee it was placed beside carbolic acid with the following direction:

"Carbolic acid and chloride of lime are to be used in aqueous solution.

"Weak solutions, carbolic acid, two per cent.; chloride of lime, one per cent.

"Strong solutions, carbolic acid, five per cent.; chloride of lime, four per cent."

The strong solutions were to be used for the disinfection of excreta.

*Creolin*, a coal tar product, which is a syrupy dark brown fluid with the odor of tar, has, during the past three years, received much attention from the German bacteriologists. It is probably the same product which was tested under the writer's direction for the committee on disinfectants, in 1885, under the name of "Little's soluble phenyle." It stood at the head of the "commercial disinfectants" tested. The experiments made in Germany, show that it is not so active for spores as carbolic acid, but that it very promptly kills known pathogenic bacteria in the absence of spores, in solutions of two per cent. or less. Eisenberg found that a solution of two per cent. killed all test organisms within fifteen minutes. Esmarch found it especially fatal to the cholera spirillum, which was killed by solutions of 1:1000 in ten minutes. The typhoid bacillus showed much greater resisting power—a one-half per cent. solution failed after ten minutes exposure. The pus cocci were still more resistant. Behring has shown that the presence of albumen greatly diminishes its germicide power. As a deodorant, it is superior to carbolic acid, and on this account is to be preferred in the sick room. A recently prepared emulsion may be used to disinfect the liquid excreta of cholera or typhoid patients in the proportion of four per cent., two hours time being allowed for the action of the disinfectant. The experiment of Jaeger upon pure cultures of the tubercle bacillus attached to silk threads were successful in destroying the infecting power of these cultures, as tested by inoculation into the anterior chamber of the eye of a rabbit, when solutions of two per cent. were used.

The value of this agent as a disinfectant is then fully established; as to its cost in comparison with the agents heretofore mentioned I am not informed.

*Quick-Lime*.—Experiments made in Koch's laboratory in 1887 by Liborius led him to place a high value upon recently burned quick-lime as a disinfectant. More recent experiments by Jaeger, Kitisato, Pfuhl and others have shown that this agent has considerable germicide power, in the absence of spores, and that the value which has long been placed upon it for the treatment of excrementitious material in latrines, etc., and as a wash for exposed surfaces, is justified by the results of exact experiments made upon known pathogenic bacteria. The germicide power of lime is not interfered with by the presence of albuminous material, but is neutralized by phosphates, carbonates and other bases, and by carbonic acid.

In the writer's experiments a saturated aqueous solution of calcium oxide failed to kill typhoid bacilli; but when suspended in water in the proportion of 1:40 by weight this bacillus was killed at the end of two hours. Anthrax spores were not killed in the same time by a lime wash

containing 20 per cent. by weight of pure calcium oxide. According to Kitisato the typhoid bacillus and the cholera spirillum in bouillon cultures are destroyed by the addition of 0.1 per cent. of calcium oxide. Pfuhl experimented upon sterilized fæces to which pure cultures of the typhoid bacillus, or cholera spirillum were added. The liquid discharges of patients with typhoid fever or diarrhœa were used for the purpose. He found that sterilization was effected at the end of two hours by adding fragments of calcium hydrate in the proportion of 6 per cent. and that 3 per cent. was effective in six hours. When a milk of lime was used which could be thoroughly mixed with the dejecta, the result was still more favorable. A standard preparation of milk of lime containing 20 per cent. of calcium hydrate killed the typhoid bacillus and the cholera spirillum in one hour when added to liquid fæces in the proportion of 2 per cent.

The experiments with this agent show that time is an important factor and that much longer exposures, as well as stronger solutions, are required to destroy pathogenic bacteria, than is the case with chloride of lime. For this reason we still give the last named agent the preference for the disinfection of excreta in the sick room. But in latrines the time required to accomplish disinfection is of less importance, and *we are disposed to give recently burned quick-lime the first place for the disinfection of excreta in privy vaults, or on the surface of the ground.* It may be applied in the form of milk of lime, prepared by adding gradually eight parts, by weight, of water to one part of calcium hydrate. This must be freshly prepared, or protected from the air to prevent the formation of the inactive carbonate of lime.

According to Behring, lime has about the same germicide value as the other caustic alkalies, and destroys the cholera spirillum and the bacillus of typhoid fever, of diphtheria, and of glanders, after several hours exposure, in the proportion of 50 cc. *normal bauge* per litre. Wood ashes of lye of the same alkaline strength may therefore be substituted for quick-lime.

Finally, it must not be forgotten that we have a ready means of disinfecting excreta in the sick-room, or its vicinity, by the application of heat. Exact experiments made by the writer and others show that the thermal death-point of the following pathogenic bacteria, and of the kinds of virus mentioned is below 60° C. (140° F.): Spirillum of cholera, bacillus of anthrax, bacillus of typhoid fever, bacillus of diphtheria, bacillus of glanders, diplococcus of pneumonia (M. Pasteuri), streptococcus of erysipelas, staphylococci of pus, micrococcus of gonorrhœa, vaccine virus, sheep-pox virus, hydrophobia virus. Ten minutes exposure to the temperature mentioned may be relied upon for the disinfection of material containing any of these pathogenic organisms—except the anthrax bacillus when in the stage of spore formation. The use, therefore, *of boiling water in the proportion of three or four parts to one part of the*



material to be disinfected may be safely recommended for such material. Or, better still, a 10 per cent. solution of sulphate of iron or of chloride of zinc, at the boiling point, may be used in the same way (three parts to one). This will have a higher boiling point than water, and will serve at the same time as a deodorant. During an epidemic of cholera or typhoid fever such a solution might be kept boiling in a proper receptacle in the vicinity of the hospital wards containing patients, and would serve to conveniently, promptly and cheaply disinfect all excreta.

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#### The Sanitary and Unsanitary Relations of Underground Waters.

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It is not my intention to deal at any length with this subject, but rather to present some of the principles to be observed in the selection of drinking-waters.

Much has been said with regard to the dangers of drinking water from wells, but it has not been until recently that the differentiation has been made as regards wells that are dangerous and those that are healthy.

As a general principle, it may be said that practically all *really* underground waters are sanitariously good; but it must be clearly understood what is meant by an underground water. For instance:

1. A water lying in a shallow dug out in prairie or bog land, down only to the impervious clay or rock below, cannot fairly be called underground water.

2. Neither can a well down even into a true water-bearing stratum of sand or gravel, be called an underground water, if the water of the upper organic soil layer is allowed to percolate toward the well laterally, without really moving downward through the underlying beds of clay loam, sand or gravel, which serve to sterilize the waters in their passage downward.

3. Neither can a well be called underground if, as is commonly the case, the well is covered with loose boards, or a wooden framework, thereby allowing the filth washings from the surface of the boards to be carried down through cracks into the water of the well.

Carl Fraenkel and others have carefully examined into the water of pit-wells, and such have by Pflügge been called "hygienic monsters."

Clearly, then, underground waters mean those which have primarily fallen upon the surface, have there been contaminated with soil microbes, but which have, in their passage downward, through percolation to the water-bearing zone situated on some impervious stratum, been purified by the several natural agencies which are at work.

Of these, doubtless, the one of the greatest importance is the mechanical retention in the upper layers, of the grosser organic matters, for instance those of sewage on a sewage farm.

I have found that at a sewage farm, the upper yard or two of the bed of sand has retained practically all suspended organic matters, and that even soluble organic matters are gradually abstracted by capillary adhesion from waters as they pass downward.

In addition, however, to this cleansing action of capillarity, we have at work under favoring conditions, the destructive action of bacteria. With various kinds of organic matters, saprophytic bacteria deal largely; but their work, while purifying to the soil, may result in emanations of an extremely injurious character. In order that this decomposition may go on rapidly and without pernicious results, *intermittency of deposit* of organic matter on the surface and the attendant penetration of air with its oxygen into the soil is required, in order that the nitrifying germ, proper, may carry on its beneficent work.

Manifestly, therefore, we have in towns conditions where, with the permanent presence of masses of organic matter in back yards and in privies, waters may move latterly or from the surface, carrying to the



largest extent their solubility admits of, organic materials to underground strata, which, appearing in wells, and their coming into contact with oxygen, supply conditions for the free multiplication of germs borne in from the surface or the air, and hence waters that have been sterile as underground streams, and loaded with soluble organic matters, become culture media for certain pathogenic bacteria in those seasons of the year when the water temperature makes their development abundant. Every one is familiar with wells, dangerous only in the later summer months when deep, or from springs in early summer, when their water reaches a higher temperature.

Much interest has for many years attached to the experiments of Pettenkofer, with regard to the rising and falling of underground waters, in their bearing upon the increase in the mortality from filth diseases, notably that of typhoid fever. It has been assumed that he was correct in saying that after a summer lowering of the ground water, and then a rise with autumn rains, typhoid invariably increased.

Now, with regard to this, as with so many other conditions, individual local circumstances will decide whether or not he is correct. For instance, Buck and Franklin have laid special stress on *wetness of soil* in general, and the effect of highness or lowness of the *sub-soil water*, as increasing *cholera infantum*. Hirsch, on the other hand, examined the relationship between the number of cases of cholera infantum and the level of the sub-soil water at Berlin from 1877 to 1882, and concluded that the height of the sub-soil water in Berlin, gives no measure of the rate of mortality. Now if we look closely into the facts there, his conclusions are as we would expect. The city is largely supplied with public water from river sources, and naturally we find that during periods of high ground water, the rivers become increased in their volume, and instead of the drinking water being more impure at such times, it would be less so.

But the case is different where well water is used. During the periods of dry weather, as the water in the superficial soil layers has gradually passed downward, it has been followed, according to the permeability of a soil by atmospheric air, thereby extending the line of organic decomposition downward—this however being limited usually to the upper four or five feet.

What then takes place when heavy rains come? The first result is that the upper permeable bed, loaded with bacteria from free decomposition of organic matters, becomes saturated with moisture, while privies also, which have during the dry weather lost most of their fluid contents by evaporation, likewise become surcharged with moisture. The water from both these supersaturated sources moves along laterally downward toward the wells, as the lowest point, and loads them with soluble organic impurities, and with putrefactive and nitrifying bacteria, in addition to suspended impurities washed in from the surface. This causes

disease, beyond question ; but this is not due to the rise of ground water necessarily, since, as all know, the actual rise, in other than shallow subterranean water-streams and in springs, does not take place till weeks, or even months, after the spring or autumnal heavy rainfalls.

We, therefore, can see that the conditions governing the purity of water supplies from ponded streams and small lakes, are very different from those governing well waters, as in pit-wells. When the first are most foul, the latter are often least so.

The question, then, of the use of underground waters, is of a much wider nature than that relating merely to pit-wells in town and country.

Falling upon pervious upper soil and upland and cultivated fields, the rain forms those great reservoirs upon which river and lake supplies, as also that of ordinary wells depend. Springs on the hillside are the index of their existence, and to these streams must we look for a pure water supply, obtained under conditions widely different from those we have just referred to.

Analyze these spring waters before contaminated by surface filth, drive an iron pipe down to this water-bearing stratum, and we find a water in all cases absolutely free from bacterial life, and those conditions which make pit-wells under ordinary conditions, such dangerous sources of supply.

As the rivers, in recent years, have been falling during the long summer, through the loss of the upland forests which formerly held back the water, and whose absence likewise creates long summer droughts, relieved at most by destructive thunder-storms, we have found ourselves depending upon ponded waters, becoming more impure by evaporation, lessening their amount, or upon rivers becoming more polluted by lessening volume, together with increasing pollution by our growing towns. We are hence forced to turn our attention to these underground waters, sometimes, it is true, somewhat excessive in hardness, but always sterile, and supplying artesian wells, driven wells, water galleries of perforated pipes, and springs carefully collected and protected against surface pollution ; while the utilization of such will do much to solve the questions both of water supply and sewage disposal which, upon this rapidly populating continent, are to-day of more importance than probably all other health problems combined.

### Simple Methods of Sewage Disposal.

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Among the many problems engaging the attention of sanitary engineers, that which embraces the removal or disposal of household sewage, is perhaps the most important. With the advance of natural sciences, the principles which are recognized as governing health and disease, have been gradually developed, until we are now face to face with the fact that if we would be free from filth diseases, it is necessary to remove from our midst those elements which are either their direct cause or agents of transmission.

The question resolves itself into disposing of such matters in a manner best suited to the conditions and locality in which they are produced, having regard:

1. To the sanitary efficiency of the method employed.
2. To the economical attainment of the result aimed at; and
3. To the method of disposal affording some return for the means expended.

The conclusions which naturally follow the foregoing propositions, and which, from a sanitary standpoint, dominate the whole question, may be summed up as follows:

a. That wherever there is excretal refuse to be disposed of, it should be so treated as to remove or separate the solid from the liquid parts.

b. That the impurities conveyed by the liquid parts of sewage which are more readily oxidized, are insignificant as compared with those of the solid parts.

c. That the solid parts of excretal sewage should never under any circumstances, be allowed to enter a water-way; and if the fluid parts can be subjected to some artificial process of purification, and subsequently passed through the soil by sub-surface irrigation, so much the better.

These are fundamental axioms which require no discussion; but it must be admitted that, thus far, serious difficulties have environed the practical application of these principles to the question of sewage disposal.

Apart from the question of health, the practice of discharging crude sewage into water courses has its attendant evils. The solid matters will gravitate to the banks and bed of the stream, which not only obstructs natural drainage but is liable to decompose and become offensive as the water falls, and exposes it to the action of the sun and air. Again, the more finely diffused solid particles are exceedingly hurtful to fish, choking up their gills and suffocating them. Moreover, fish breathe by means of the free oxygen which is contained in the water in which they

natate, and this element being deprived of its oxygen by the admixture with sewage, the fish must necessarily die.

This fact alone, viewed in the light of political economy, should restrict the amount of sewage poured into any limited area of water; for however admissible *fresh* sewage may be as food for fish, it soon becomes stale, and in this condition acts as a poison which will eventually destroy the fish and oysters of any water area into which it is discharged.

Again, when sewage passes into a putrefactive state, the gases that are generated either in sewer pipes or water-courses, are capable of producing certain malignant diseases; but whether the illness is to be regarded as the direct effect of inhaling the mixed chemical gases, or as an expression of the consequences of inspiring a micro-organism which is reproduced in the human body, is not known to medical men—who are, however, perfectly familiar with the illness.

One of the greatest difficulties of adequately dealing with this sewage question, lies in the enormous bulk to be operated upon—equal to about five gallons of water to every three ounces of fecal matter—and it is therefore reasonable to suppose that, could some simple mechanical appliance be devised by which the liquid could be drawn off and separated from the solid parts, it would greatly assist in the efficient treatment of excretal refuse. The fluid part need not necessarily be passed directly into a water-course; it could be first distributed by sub-surface irrigation over a sufficient area of land, for which it would serve as a useful manure, and by which it would be effectively filtered and still further purified. The employment of such a method is the more to be recommended because, when a process of separation only has been employed, as contradistinct from a process of precipitation with chemicals, the effluent is richer in organic substances available for the nutrition of plant life, and the solid matters being excluded, the pores of the soil will not become clogged.

As to the manurial value of the solid matters retained, that must be judged rather by the practical results of the agriculturist than by the presumed theoretical values based on analytical data. The percentage of combined nitrogen, however, in this material is remarkably constant, and the phosphoric acid which it contains is also an important ingredient in an agricultural point of view.

Faecal matter has been termed “the natural food of the soil,” as it returns to the soil those elements which are taken from it by the growth of vegetable products necessary for the proper nutrition of man. By treating excrementitious matters by a process of separation, moreover, what is now a nuisance to cities and towns may be made a source of profit to the country generally, especially to the agriculturist, who would find in the solid matters a valuable guano—superior to most manures in the market—produced at his own door.

“The most fertilizing and effective manure,” says Victor Hugo, “is human manure; but what is done with this golden dung? It is swept into



the gulf! We send, at great expense, fleets of ships to collect at the southern pole the guano of petrels and penguins, and cast into the sea the incalculable element of wealth which we have under our own hands.”\*

If this so-called “golden dung” has the value that is ordinarily attached to it, private enterprise would surely be rewarded for its collection and utilization, and could well afford to pay a handsome bonus for its preservation. Agriculture, so important a factor in the country’s industry and prosperity, has up to this time suffered such heavy losses from this material being “cast into the gulf,” that, apart from the question of health, its interests are fully entitled to the serious consideration of political economists and legislative bodies.

It has been asserted that one prime cause of the fall of the Roman Empire was the building of the great sewers of Rome, and the consequent disastrous deflection of what might have been an enormous fertilizing material into the Tiber where it went to waste.

The Chinese are said to preserve carefully everything that can be used to enrich the earth for food production, and there seems to be a growing disposition, both in Europe and America, to follow their example, by devising measures and making experiments to utilize excretal refuse for enriching the soil; but we must admit that there is still a squandering of this valuable material that may well alarm the political scientist.

It is undeniably, of the last importance that household sewage, which is now allowed to go to waste with a reckless disregard of both public health and agricultural prosperity, should be utilized in some cheap, cleanly and simple fashion; and surely, the ingenuity of man can be applied in no more useful way than to a proper solution of this important question, which embraces not only the welfare of society, but even the integrity of nations.

Passing by the difficulties which are unmistakably attendant upon the disposal of sewage in large quantities, the question comes up, how is it to be treated, as treated it must be, if the health of the inhabitants of our towns is to be considered? The methods of treatment, other than those involved in the systems by which the whole of the sewage is sent into water-courses—if, indeed, this may be considered a system of treatment at all—and in applying crude sewage for the irrigation of land, are pretty numerous; but numerous as they are, they all come under one or the other of the following classes:

1. Dealing with excretal refuse in a special way, altogether separate from large sewage drains, leaving these to conduct the waste waters of domestic and industrial operations and also the rain or storm waters alone.

2. The precipitating process, by which the solid organic and putrescible portions of the sewage are deposited in a solid form, which may be used

\**Les Miserables*, p. 290.



as an ordinary manure, passing the liquid portion, in a condition more or less clear into some stream or river.

3. Keeping the rain or storm water on the surface, or sending it into drains distinct from those conveying sewage, to be discharged into some river or stream; while the crude sewage, in a more concentrated form is also passed into the water-course or on the land for irrigation purposes.

4. A combination process of straining, precipitating and filtering, by which the solid part of the excreta is separated from the liquid, as it were, at the fountain head, and retained in a hermetically closed vessel, or

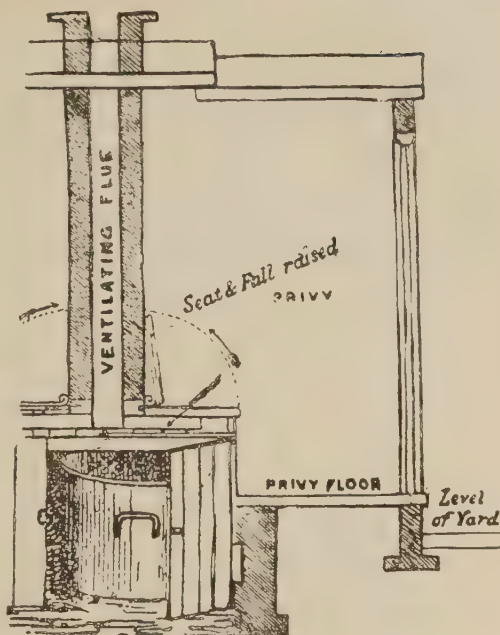


FIGURE 1.

tank, under a column of water, while the fluid parts, with the ordinary water of the closet, are passed through the meshes of a fine strainer, and then either run into the soil by sub-surface irrigation or filtered through some oxidizing agent, as burnt or spongy iron, to be subsequently discharged on the surface of the ground, or into a water-course.

Under the first of these four classes, there are a number of arrangements, which, when taken collectively, may be termed the dry system of collection.

The cess-pit and the midden were the first attempts at collecting excreta, not so much, however,

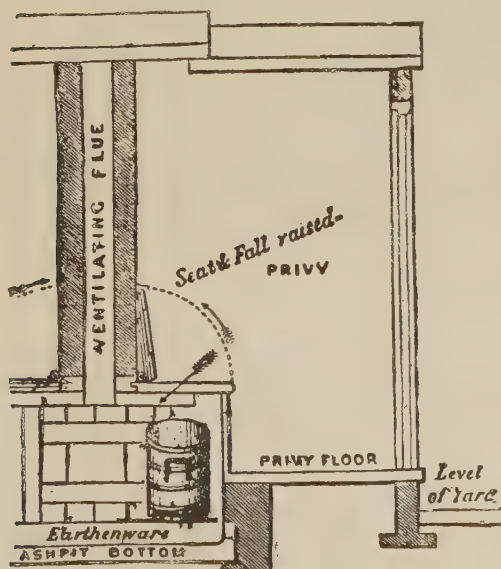


FIGURE 2.

for the purpose of profit as with the idea of preventing nuisance. The cess-pit need only be mentioned to be condemned. The ash pit midden, or privy, has its advantages and its difficulties; of the difficulties, the education of the people to use them properly is chief—a difficulty, however, that applies quite as much to water closets as to middens.

The general principle of the ash pit midden or privy system is illustrated in Figure 1. It consists of a common privy, with a small covered ash pit, from the top of which a ventilating shaft is taken to the roof of the house to which it is attached. The floor of the ash pit is of glazed

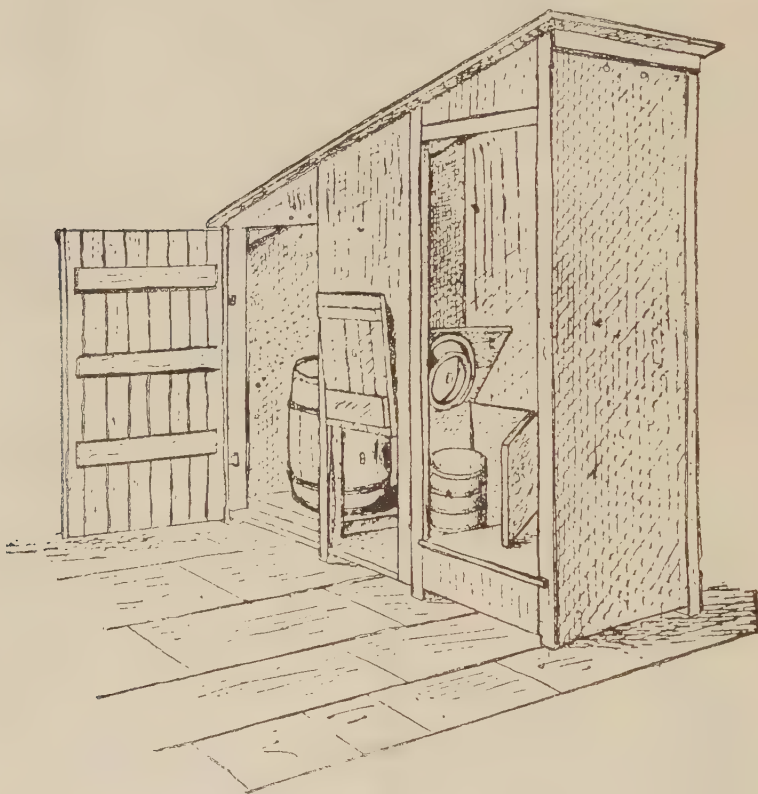


FIGURE 3.—ROCHDALE PAIL CLOSET.

*A*, excrement pail. *B*, ash tub. *C*, seat cover (raised). *D*, iron collar below seat, reaching slightly into pail when cover is down. *E*, hinged upright of seat. *G*, door admitting from outside to excrement pail.

earthen-ware, absolutely water tight. The ashes used as an absorbent are emptied into the pit through the privy seat, whenever the closet is used. These pits are cleaned as often as may be necessary. This system is used at Hull, England.

The Manchester method, Figure 2, consists of a common privy, out-

side the house, constructed with a sunken pit in which stands a galvanized iron receptacle, placed under the seat of the closet.

The floor of the pit is of earthenware, and the ventilation is through the flue as shown in the illustration. The door for removing the receptacle is at the side or back. In the absence of the receptacle, the ash pit can be used. The receptacle is emptied weekly.

The Rochdale method is similar to the Manchester, except that the wooden pail, generally made from a kerosene barrel, is substituted for iron, and sits immediately beneath the closet seat and on the same level of the floor, instead of below the surface of the ground, which makes removal more difficult. Figure 3 is an illustration of the Rochdale system.

The Goux system consists in lining the inside of the tub with absorbents as charred sea weed or dry earth rammed in by a central core so as to give a uniform lining to the tub, thus preventing splashing. This method necessitates the frequent removal of the excreta. The faecal matter is received in the central cavity of the lining.

At Birmingham, where the galvanized pails are used to the extent of some 40,000, representing a population of 250,000, the contents are collected weekly. These are emptied into a vat at the place of deposit, and some sulphuric acid added to fix the ammonia.

The object of these several methods is the conversion of the old and dangerous system of privy pits into receptacles calculated to promote health and decency, and keep out from sewers as much of the excremental matter as possible. There is no doubt whatever of the fact that either of these systems is infinitely more healthy and more reasonable in every way than the cess pool, and, personally, I am strongly inclined

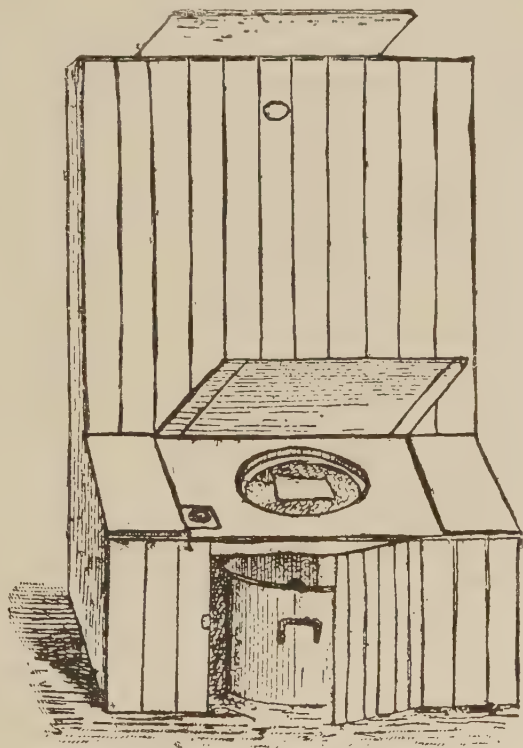


FIGURE 4.—DRY EARTH CLOSET.

to think that the system of collection in villages and small towns, even if not in larger centers of population, is to be recommended in preference to the usual water-carriage system.

Lastly, we have among the dry systems of collection, Moule's dry earth closet, in which the deodorizing and absorbent power of the earth is applied to the treatment of excreta. This closet is illustrated in Figure 4.

However efficient as a deodorizer and absorbent dry earth may be, there are almost insuperable difficulties attendant upon its use, which have retarded its general introduction, even in country districts. About four and one-half pounds of dry earth per head per day are required to obtain a consolidated and inoffensive compost. A village of 1,000 persons would need, therefore, about two tons of dry earth per day. Moreover, it is a *sine qua non* that no liquids are to be discharged into the closet, so that it is a system which does not provide for liquid excreta: or if the air is very damp, which is the normal condition in certain places, or if the contents get moist in any way, we have, to all intents and purposes, a cesspool without its advantages, or without the special precautions that are commonly taken with regard to cesspools.

We come now to consider the precipitating processes. A great number of these have been tried, but the general result seems not to have been satisfactory, since none have thus far been free from a feature which practically condemns the whole of them, viz: The employment of expensive chemicals in large quantities for the purpose of precipitating from the water certain matters which are therein suspended.

The third plan is that by which the great dilution of sewage with water is proposed to be avoided by having two distinct sets of drains, one to convey away the household sewage alone to some water-course, or to be treated by precipitation or sub-surface irrigation; the other set of drains to carry off storm and street water. This was first proposed half a century ago by Mr. F. O. Ward, of England, and was subsequently practically carried out by Mr. Menzes, at Eaton, and, more recently, by Col. Geo. E. Waring, at Memphis. There can be no doubt that if the rainfall could be excluded from the sewage proper, a vast step would be gained towards the practicability of usefully applying sewage to the soil, but even then the area of land required would be so great and the cost of preparation so immense that the suggestion has been considered by high authorities to be hardly practicable. Moreover, it has been pretty well established that the putrefactive decomposition of solid excretal matter in soils gives rise to the production of malarial and parasitic diseases, and that such *solid* organic matters, after a time, will form a crust or cake upon and in the interstices of the soil, which gives off offensive and dangerous effluvia. Again, the sub-soil water from broad irrigation is charged with decomposing matters, and Petenkofer is not alone in his opinion that "there is no more fruitful source of disease than polluted sub-soil water which is constantly changing its level."



The mere fact that the available land near large cities, at least, is insufficient for the disposal of sewage by irrigation, is sufficiently condemnatory of the process as an exclusive means of utilizing sewage. According to M. Lefeldt, an acre of land is required for the excreta of every twenty or thirty persons when applied by broad irrigation; while Mr. Henry Robertson, of England, in a paper on sewage disposal (*Sanitary Record*, 1884), contributed to the sanitary institute meeting at Dublin (1884), states that "open porous land with a good free sub-soil drained six feet deep, will deal, per acre, with the sewage of 600 people," but the cost of preparing the land he estimates at from \$4,000 to \$5,000 per acre, so that, practically, it does not much matter which kind of irrigation be used.

The theory of purification by irrigation is that the fluid part of sewage gradually percolates through the land, and is finally carried off by the artificial underdrains, while its organic constituents are subjected to oxidation by the agency of micro-organisms producing the phenomenon known as "nitrification." The solid parts left in the soil are also attached, and gradually succumb to the influence of hydration and oxidation; but there is a limit to this process, and should the land become overcharged or choked with solid matters, which often occurs on sewage farms, oxidation will not proceed, and an intolerable nuisance ensues.

To prevent this the separation of the solids from the fluids of sewage is essential, and after this the effluent may be disposed of with entire immunity by a process of irrigation: or, in the absence of special objections, the effluent may be discharged into a river or other water area having sufficient volume or flow to oxidize the organic matters which are held in solution. This, however, applies only to sewage, whether mixed with rainwater or not, that has been so dealt with by screening, subsidence, precipitation or otherwise, that the solid parts are removed from the liquid parts.

If our boasted scientific knowledge is worth anything, it should enable us to separate the fluid from the solid parts of excretal sewage, and to convert the latter into a good practical manure, while the fluids may be discharged into the soil, or into some water-course, in an innocuous condition.

Some three or four years ago Mr. C. T. Kingzett, the distinguished London chemist, suggested that a small portable apparatus might be supplied to each house, provided with a strainer, whereby the water of crude sewage would be separated from the solid parts, and the receivers could, by a properly organized system, be collected as often as necessary, and a clean one left in the place of the one removed. Such an apparatus, it scarce need be said, should be as simple and as economical as possible, consistently with preventing nuisance or danger to public health; and I claim for a device which I have lately introduced, that it is at once the most simple, the most effective and the most economical



that has yet been proposed for the purpose. The method consists of a process and apparatus by which the solid matters of house-hold refuse are effectively separated from the water of crude sewage by mechanical straining, subsidence and precipitation, whereby a large proportion of the suspended matters are detained in a hermetically closed receptacle, which when full can be removed and replaced with an empty one by a common laborer, while the liquid parts are continuously delivered in such a condition of purity, that they may be used to irrigate the soil with advantage, and without any danger of choking its pores, or the effluent from the precipitating tank may be further purified by filtration through iron to such an extent that it can be discharged into any drain, sewer, cesspit, river or stream with entire immunity. The apparatus is illustrated in the following diagram:

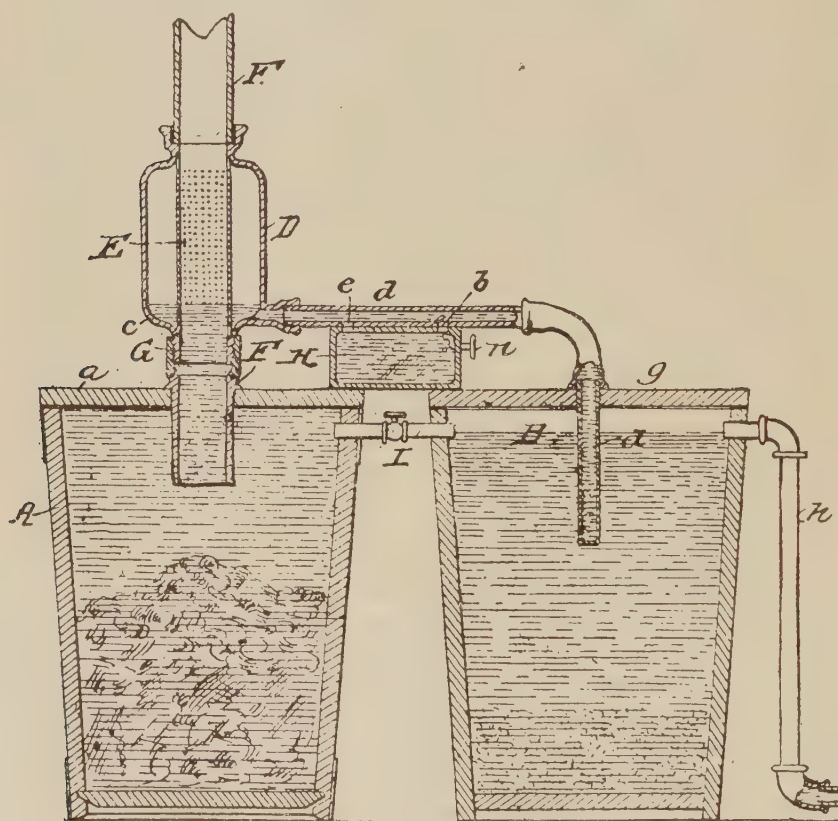


FIGURE 5.

Figure 5 represents a vertical section of the apparatus with all its parts intact, except the filter, which is omitted as it is rarely to be used. *A*, represents the receiving vessel or "receiver;" *B*, the settling or "precipitating tank;" *D*, the outer cylinder of the "strainers;" *E*, the inner

perforated "strainer;" *F F*, the soil pipe connected with the strainer *E* above and below; *G*, the collar which connects the soil pipe with the receiver; *H*, the box or holder for the precipitating reagent; *I*, pipe connecting the receiver and precipitating tank for the purpose of drawing down the water to prevent slopping when the receiver *A* is detached at the cellar *G* to be removed. When detached the opening at *G* is closed with a close-fitting cap.

The operation of the apparatus is as follows: All such matters as are generally discharged into the soil pipes of houses are conveyed into the "receptacle," which is removably connected with the soil or drain pipe. The coarser, undissolved matters, such as foreign bodies, ordure, and paper not yet dissolved, which the trap of the soil pipe has allowed to pass, sink by gravity to the bottom of the receptacle, while the matters that are more or less dissolved in water find their way along with the supernatant liquid of the sewage through the meshes of the strainer, and from thence by a connecting pipe *D* into the precipitating tank.

The precipitating tank receives the overflow from the "receptacle" which has passed through the strainer. This tank is provided with an automatic device for discharging a certain quantity of chemical precipitants into its contents. The supernatant liquid in the precipitating tank, already quite pure, is discharged through the pipe *h*, which, when the effluent is to be disposed of by sub-surface irrigation, is converted into a siphon simply by extending this pipe downward, on the inside of the tank, to a point near the bottom. In this way the flush through the sub-surface irrigation pipes becomes rapid and continuous until the tank is emptied.

The receivers, containing the solid parts of excretal matters, are to be collected, when full, by a properly organized system, and clean ones left in their places. These receivers should be taken directly to the usine or compost factory, where their contents may be worked up, with other substances, it may be, into an innocuous and valuable manure powder ready for immediate application to the soil. The utilization of the solid excreta is not, however (and this is a very important matter to public bodies which have to do with the disposal of sewage), confined in any sense to its employment as a manure, or as a source of ammonia and certain salts. It may be pressed, air-dried, and employed as ordinary fuel for use in boilers or other furnaces. Further, it may be ground up with clay and lime, and converted into brick or cement after the process devised by the late General Scott, of England; or, again, it may be admixed with other materials, such as are ordinarily employed, and converted into a material for use in the construction of sidewalks, foundations of buildings, etc.

Original Investigations on the Heating and Ventilation of School Buildings.

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By R. HARVEY REED, M. D., of *Mansfield, Ohio.*

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At the meeting of the American Medical Association, held at Newport, R. I., two years ago, a special committee was appointed by the section of state medicine on "school hygiene," consisting of Dr. D. F. Lincoln, Geneva, N. Y.; Dr. J. A. Schenck, Topeka, Kan.; Dr. Geo. H. Rohé, Baltimore, Md.; Dr. J. G. Pinkham, Lynn, Mass.; and the author.

After some correspondence, it was decided to divide the work of this committee, and as a result, I was assigned the "original investigations on the heating and ventilation of school buildings."

After no small amount of research among the multiplicity of reports of the numerous air analyses of the different school rooms in the various cities, I found them all practically valueless, so far as making anything like a systematic comparison of results was concerned, of even an approximately scientific character.

By this I mean to say that they all lacked the details regarding those numerous modifying elements, which of necessity surround each individual room; such as the temperature *outside* of the school building; the temperature *inside* of the same at the level of the floor, mouth and ceiling, both in the front and at the rear of the room, the same observations regarding the humidity, as well as that of the carbon dioxide; the number of scholars present; the size of the room; the method of heating the same, as well as the system of ventilation employed; the amount of fresh air supplied, and the quantity of foul air discharged from a room, in a given time, together with the barometric pressure—each one of which is an important arc of a complete circle; and of necessity must all be considered together, and due credit given each one, in order to obtain anything like definite or reliable information regarding any special method or system of heating and ventilating a given room or a certain building.

With a view of obtaining the most reliable results possible, I devised a blank chart, which I thought would, as near as possible, contain all these more important factors.

I then determined to pursue the same line of investigation, of different school rooms in the same building; and different buildings in the same city; and different cities in the same state; among which I designed to embrace as large a variety of the various methods of heating and ventilation, as we practically could, and to repeat our examinations sufficiently often on the same systems, when at all practical, to enable us to

arrive at some definite conclusions, regarding any special method of heating and ventilation, if such were at all possible.

As a result, I prepared a chart which embraces the following details:

- 1st.—Date and time of day inspection was made.
- 2d.—Name of school building.
- 3d.—Name of school room.
- 4th.—Number of pupils present.
- 5th.—Number of cubic feet of air contained in the room.
- 6th.—Temperature outside of the building.
- 7th.—Humidity outside of the building.
- 8th.—Barometric pressure in inches.
- 9th.—State or condition of the weather.
- 10th.—Kind of heating apparatus in use.
- 11th.—System of ventilation employed.
- 12th.—Number of cubic feet of fresh air supplied per hour.
- 13th.—Number of cubic feet of foul air discharged per hour.
- 14th.—Temperature at the front of the room.  $a$ , at the floor;  $b$ , at the mouth;  $c$ , at the ceiling.
- 15th.—Temperature at the rear of the room.  $a$ , at the floor;  $b$ , at the mouth;  $c$ , at the ceiling.
- 16th.—Humidity at the front of the room.  $a$ , at the floor;  $b$ , at the mouth;  $c$ , at the ceiling.
- 17th.—Humidity at the rear of the room.  $a$ , at the floor;  $b$ , at the mouth;  $c$ , at the ceiling.
- 18th.—The amount of carbon dioxide found in the air of the city per 10,000 parts.
- 19th.—The amount of carbon dioxide per 10,000 parts found in the air in the front of the room.  $a$ , at the floor;  $b$ , at the mouth;  $c$ , at the ceiling.
- 20th.—The amount of carbon dioxide per 10,000 parts found in the air at the rear of the room.  $a$ , at the floor;  $b$ , at the mouth;  $c$ , at the ceiling.

#### BACTERIOLOGICAL INVESTIGATION.

21st.—Germs found in the air of school rooms when occupied.  $a$ , near the floor at the point of entrance of the fresh air;  $b$ , near the floor at point of exit of foul air.

22d.—Miscellaneous observations.

Having completed the general plan of investigations, I then determined to investigate, as far as practicable, the following methods of heating and ventilating school rooms.

1st.—School rooms warmed by common stoves, with and without any provisions of ventilation, other than windows, doors and transoms.

2d.—School rooms warmed by small furnaces placed in each room, which heated fresh air received from the outside, and delivered it to the



room, with and without provisions for the escape of the foul air, other than that furnished by the doors, windows and transoms.

3d.—School rooms warmed by furnaces or heaters, and ventilated at the top.

4th.—School rooms warmed by furnaces or heaters, and ventilated at the floor.

5th.—School rooms warmed by furnaces or heaters, and ventilated at the floor and ceiling both.

6th.—School rooms warmed by direct steam and ventilated by doors, transoms and windows.

7th.—School rooms warmed by indirect steam and only ventilated by foul air ducts, windows and transoms.

8th.—School rooms warmed by both direct and indirect steam and ventilated by foul air shafts, windows and transoms.

9th.—A school room warmed by direct steam, and ventilated by an open fire place and a top ventilator.

10th.—School rooms warmed by a furnace which delivers the hot air to the room at the floor, and which room is also supplied with cold fresh air at the floor, and is provided with means for removal of foul air at the top of the room.

11th.—School rooms warmed by an air warmer, which supplies the warm air at the floor, and removes the foul air at the floor without the aid of open doors, windows or transoms.

After having completed the outline of these proposed investigations, I next found it quite a difficult task to secure the services of a competent chemist, who was willing and able to undertake the work I had laid out. But, after corresponding with the chemists of several cities, I obtained the services of Prof. Lewis Schmidt, B. Sc. (Massachusetts Institute of Technology), of Cincinnati, Ohio, to undertake the chemical investigations, together with the humidity, temperature, etc., etc.; which he conducted throughout the entire investigation for me, in a perfectly satisfactory manner.

The original report contemplated the examinations for carbon monoxide (C O) but as this product is seldom found in the air, except when it has been passed for a considerable period, of at least two hours, over red-hot iron plates, we decided to omit this part of the report, and also the examination for organic matter, owing to the impractical character of the former, and the unreliable methods of determining with any degree of scientific accuracy the latter.

Arrangements were supposed to have been made with couple of bacteriologists to complete the bacteriological part of the work in a systematic manner. But when their work was received, it was found to have been conducted in such a *helter-skelter* manner, as to render it utterly valueless for this report, and in consequence I am compelled to omit it entirely. In fact I don't think it has detracted anything from



the practical value of the report at best; my experience in this direction, has led me to conclude that there is little to be derived from this particular field, of a practical character, that will effect either the heating or ventilation of school rooms, either pro or con. Yet if properly conducted in a *systematic* manner, it might be made to serve the purpose of proving whether the germs are increased or diminished in quantity, from the time the air enters the room until it leaves it, and approximately to what extent, and under what circumstances. Outside of this I cannot conceive of any particular value to be derived from it; and certainly not when made without any apparent reference to a definite object, as was done in this case.

I next selected Cleveland, Mansfield, Columbus and Cincinnati, Ohio, for the cities in which I would conduct the proposed investigations; and to which I gave my personal attention, in Mansfield and Cleveland, and in part my personal attention in Columbus and Cincinnati, but least so in the latter, having only visited a few of the school rooms in that city, owing to unavoidable circumstances, which prevented my presence during the investigations there.

My instructions were to make investigations of each room, as near as possible under the conditions it was usually kept in, and to be very careful to leave nothing undone that would enable us to obtain the highest degree of accuracy possible, regardless of the system of heating and ventilation we were investigating, as we were seeking actual facts, for scientific purposes, let them reveal what they would.

In carrying out these investigations, we have made altogether 224 determinations of the carbon dioxide, not including the examinations of the outside air; 233 determinations of the humidity, not including those made outside of the buildings; and 232 examinations of the temperature exclusive of those made outside of the buildings; saying nothing of the numerous other auxiliary observations of surrounding conditions.

These examinations were made in 39 different school rooms, of 23 different school buildings, in 4 different cities, and include 10 different systems of heating and ventilation.

By referring to the itemized charts, you will observe that we have examined the air in 10 rooms in Mansfield, 7 rooms in Cleveland, 4 rooms in Columbus and 18 rooms in Cincinnati: which embraced 11 rooms heated by the so-called Grossius system; 11 rooms warmed by the Smead system; 5 by the Johnson system; 3 by indirect steam; 3 by common stoves; 2 by direct steam; 1 each by the Patric and Miller furnaces; direct steam with an open grate, and direct and indirect steam. You will also observe that we have made six examinations each, of the temperature, humidity and carbonic dioxide in each room, viz.: Two each at the floor, one each in the front and rear of the room; two at the mouth, one each in the front and rear of the room; and two at the ceil-

ing, one each at the front and rear of the room ; besides all the supplementary investigations we have associated with these three primary determinations.

In making these investigations we used tested Fahrenheit thermometers for obtaining the temperature; whilst a carefully constructed hygrometer was used for determining the amount of moisture contained in the air, the scale of which was so constructed as to represent complete saturation at 100 and complete dryness at 0. For determining the velocity of the currents of air, we used a delicately constructed anemometer, which would register the velocity of any current of air, that was moving over 30 feet a minute. By means of glass rods, rubber hose and a small bellows, we could obtain air from any desired part of the room, a given quantity of which was pumped into clean dry bottles, of a known capacity, which were carefully corked and labeled, and taken to the laboratory for the determination of the  $\text{CO}_2$  which was obtained by neutralizing the carbon dioxide with a barium solution of a known quantity and strength, and calculating the amount of  $\text{CO}_2$  per 10,000 parts of air from that, in the usual manner, which is familiar to all practical chemists.

By referring to these itemized charts, one of which has been prepared for each city in which examinations of the air was made, you will observe that, with the exception of the Smead system, either doors, windows and transoms, or all, were relied on for ventilating and regulating the temperature of the room.

From these *itemized charts* we have compiled a number of tables which embrace:

1. The highest and lowest temperature, and the highest and lowest humidity, outside of the building examined, and also the average temperature and humidity of the air of the city, which we have shown : *a*, as found in each city ; *b*, as found associated with each system of heating and ventilation ; *c*, the general average of each.

TABLE I,

Showing the highest and lowest temperature and the highest and lowest humidity outside of the buildings, together with the average of the same, by cities.

| LOCATION.                                                                 |                                               | Temperature outside of the building, Fah. | Humidity outside of the building, based on 100 for complete saturation. | Total number of examinations made. |
|---------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------|------------------------------------|
| Mansfield, Ohio, . . . . .                                                | { Highest, . .<br>Lowest, . .<br>Average, . . | 38.0<br>27.5<br>32.0                      | 89.8<br>46.3<br>71.1                                                    | { 10                               |
| Cleveland, Ohio, . . . . .                                                | { Highest, . .<br>Lowest, . .<br>Average, . . | 55.2<br>33.0<br>45.3                      | 89.5<br>35.4<br>49.0                                                    | { 7                                |
| Columbus, Ohio, . . . . .                                                 | { Highest, . .<br>Lowest, . .<br>Average, . . | 53.0<br>44.5<br>49.5                      | 59.4<br>42.3<br>50.8                                                    | { 4                                |
| Cincinnati, Ohio, . . . . .                                               | { Highest, . .<br>Lowest, . .<br>Average, . . | 69.0<br>33.5<br>52.0                      | 100.0<br>48.0<br>75.3                                                   | { 18                               |
| Total, . . . . .                                                          |                                               |                                           |                                                                         | 39                                 |
| Grand average for the four cities above named out of 39 examinations, . . | { Highest, . .<br>Lowest, . .<br>Average, . . | 52.0<br>32.0<br>44.9                      | 75.3<br>49.0<br>61.5                                                    |                                    |

2. The highest and lowest temperature, and the highest and lowest humidity inside of the school rooms examined, together with the average of the same : *a*, as found in each city ; *b*, as found associated with each system of heating and ventilation ; *c*, the general average of each.

TABLE II,

Showing the highest and lowest temperature and the highest and lowest humidity outside of the buildings, together with the average of the same by systems.

|                                                                         |                                             | Temperature outside of the building, Fah. | Humidity outside of the building based, on 100 for complete saturation. | Total number of examinations made. |
|-------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------|------------------------------------|
| Grossius system (with open windows, etc.), . . . . .                    | Highest, . .<br>Lowest, . .<br>Average, . . | 68.1<br>29.5<br>43.1                      | 95.2<br>46.3<br>80.7                                                    | 11                                 |
| Smead system (with no open doors, windows or transoms), . . . . .       | Highest, . .<br>Lowest, . .<br>Average, . . | 69.0<br>32.0<br>52.7                      | 100.0<br>42.3<br>64.9                                                   | 11                                 |
| Johnson system (with open windows, etc.), . . . . .                     | Highest, . .<br>Lowest, . .<br>Average, . . | 62.0<br>41.0<br>49.7                      | 66.9<br>48.0<br>59.3                                                    | 5                                  |
| Indirect steam (with open windows, etc.), . . . . .                     | Highest, . .<br>Lowest, . .<br>Average, . . | 54.5<br>41.5<br>48.0                      | 40.1<br>35.4<br>37.5                                                    | 3                                  |
| Common stove (with open windows, etc.), . . . . .                       | Highest, . .<br>Lowest, . .<br>Average, . . | 55.2<br>27.5<br>37.4                      | 62.4<br>47.9<br>53.4                                                    | 3                                  |
| Direct steam (with open windows, etc.), . . . . .                       | Highest, . .<br>Lowest, . .<br>Average, . . | 41.0<br>33.0<br>37.0                      | 89.5<br>48.8<br>69.1                                                    | 2                                  |
| Patric furnace (with open windows, etc.), . . . . .                     | Highest, . .<br>Lowest, . .<br>Average, . . | . . . . .<br>. . . . .<br>32.1            | . . . . .<br>. . . . .<br>89.5                                          | 1                                  |
| Miller furnace (with open windows, etc.), . . . . .                     | Highest, . .<br>Lowest, . .<br>Average, . . | . . . . .<br>. . . . .<br>33.5            | . . . . .<br>. . . . .<br>94.8                                          | 1                                  |
| Direct steam, with open fire grate (with open windows, etc.), . . . . . | Highest, . .<br>Lowest, . .<br>Average, . . | . . . . .<br>. . . . .<br>29.0            | . . . . .<br>. . . . .<br>61.9                                          | 1                                  |
| Direct and indirect steam (with open windows, etc.), . . . . .          | Highest, . .<br>Lowest, . .<br>Average, . . | . . . . .<br>. . . . .<br>44.5            | . . . . .<br>. . . . .<br>56.0                                          | 1                                  |
| Total, . . . . .                                                        |                                             |                                           |                                                                         | 39                                 |

3. The highest and lowest amount of carbon dioxide found per 10,000 parts of air, inside of the school rooms, and the average of the same: *a*, as found in each city; *b*, as found associated with each system of heating and ventilation; *c*, the general average of each.

4. The average amount of carbon dioxide found per 10,000 parts in each city.

Before commencing the study of these tables it might be well to remark that  $70^{\circ}$  Fahr. is a fair average standard to adopt for the temperature of a school room, and from 40 to 50 for the ideal range of humidity, and whilst the  $\text{CO}_2$  varies in different cities, and on different days in the same city, and at different times in the same day, yet we have found that the general average in the four cities under consideration, was 4.853 parts in 10,000 parts of air, which we will be obliged to use in this case for the standard of our comparisons.

We will readily observe that Tables Nos. 1 and 2 are only designed to prepare us for those which are to follow, by giving us the *outside* relations of the same conditions we are about to consider *inside* of the school rooms.

By studying Table No. 3, you will observe that we have given the *extremes* of temperatures and humidities, as well as the average temperatures and humidities found in the four cities, *without* regard to the system of heating and ventilation which produced them; whilst Table No. 4 considers the same conditions *with* reference to the systems of heating and ventilation that produced these results; whilst Tables Nos. 5 and 6 show the determinations of carbon dioxide, in the same manner as described for the temperature in Tables Nos. 3 and 4.

The limited time and space allotted to this paper will not permit me to enter into a detailed discussion of these numerous tables, which represent a multiplicity of conditions, which modify and change the general results, all of which must be duly considered, in order to arrive at legitimate conclusions.

For the present, at least, I will have to content myself with giving you an accumulation of data, which I will be obliged to leave for you to study at your leisure; whilst I proceed to consider some of the more prominent features of this report.

#### THE HEATING.

By examining this report you will observe that we have examined quite a variety of methods of heating, which has shown a still greater range of temperature, which is especially noticeable between the floor and top of the room; but when you come to compare the *general average* of the temperatures taken of the different systems, they vary but little at the same point of the different levels, which, at the floor, in the front of the rooms, show a range of from  $59.5^{\circ}$  to  $68.8^{\circ}$ , and at the mouth in front from  $67.0^{\circ}$  to  $73.8^{\circ}$ , and at the ceiling in front from  $68.5^{\circ}$  to  $85.0^{\circ}$ , whilst there is quite a difference in the range of the average of temperatures, there is a much greater difference observed between the floor and ceiling, which ranges from  $59.5^{\circ}$  to  $85.0^{\circ}$ , or a difference of  $25.5^{\circ}$ .

Again, in the average at the rear of the room, the range of temperatures at the floor varies from  $60.0^{\circ}$  to  $74.5^{\circ}$ , and at the mouth from  $64.0^{\circ}$



to  $70.2^{\circ}$ ; and at the ceiling from  $70.7^{\circ}$  to  $90.0^{\circ}$ ; whilst at the rear of the rooms there was found to be a difference between the lowest average at the floor and the highest average at the ceiling of  $30.0^{\circ}$ .

It must be remembered in the study of these results, that, with the single exception of the Smead system, the temperature in every instance was modified by open doors, windows or transoms, and not unfrequently all of them. In the majority of instances the windows were open several inches between the sash and very frequently at the top, and often at the bottom; and which not unfrequently had a strong ally in the form of an open transom or door. These methods of modifying the temperature, to a certain extent accomplished the desired results, so far as the average temperature was concerned, but at a great expense of fuel and waste of heat; and unavoidable exposure of the pupils to cold and changeable drafts of air.

On the other hand, the Smead system of heating accomplished even better average results, and very much better individual results, at the different levels of the room than any other system examined, and that, too, without exposing the pupils to changeable drafts of air from open doors, windows and transoms; saying nothing of the economy of fuel by the prevention of the unnecessary waste of heat through these objectionable openings in the doors, windows and transoms.

#### THE HUMIDITY.

The amount of moisture contained in the air of our school rooms should not be lost sight of. Warm air that is *too* dry, is irritating to the respiratory tract, and is more liable to be charged with dust, than air containing a greater amount of moisture; whilst air that is *overcharged* with moisture at the same temperature creates a sultry, oppressive atmosphere, which will predispose the pupils to "catching cold" on leaving the school room.

By examining these charts and tables you will observe that, as a rule, the humidity *decreases* in the production of artificial heat as the temperature *increases*. Yet this condition is very greatly modified by the humidity of the outside atmosphere. For example, take a wet, sultry day, when the humidity of the external air is almost at the point of complete saturation, and at the same time the outside *temperature so high* that but little artificial heat is required, or can be tolerated, the humidity will be found to be exceedingly high in the school rooms, as a natural result of a combination of circumstances. Again, with the same degree of humidity outside, associated with a *cold raw air* requiring a considerable quantity of artificial heat to make the school room comfortable, the humidity of the school room, whilst somewhat high, will be found much lower than under the former conditions; and at the same time the average temperature will be almost or practically the same.

You will observe by Table No. 4, that the average humidity at the

floor in front of the school rooms, in the various systems varies from 27.5 to 61.2; whilst at the mouth it ranges from 29.4 to 50.7; and at the ceiling from 19.8 to 49.2. At the rear of the room, it varies at the floor from 25.6 to 50.8; whilst at the mouth it ranges from 33.3 to 51.5; and at the ceiling from 16.5 to 45.0.

By these you will observe that even many of the general averages are entirely too low, although few of them are found to be too high. Yet, notwithstanding all this, when we examine the itemized charts and study the individual results in isolated cases, you will find still greater variations of the humidity in different parts of the same room; and especially so when no regular system of circulating and changing the air has been adopted.

On the other hand when a regular system of circulating the air has been adopted, it is remarkable how the results are modified regarding the amount of moisture contained in the air at different points in the same room, and even different rooms in the same building.

Notwithstanding we have advocates at the present time who question

#### CARBON DIOXIDE.

the injurious effects of even large quantities of carbon dioxide in the air of school rooms, yet I am not prepared to accept their theories, without more than circumstantial evidence to verify their correctness.

We must bear in mind that the presence of large quantities of  $\text{CO}_2$  does not necessarily make any physical changes in the air that are readily observed by the senses.

It is true that immense quantities of  $\text{CO}_2$  will produce fatal asphyxia, yet it never has been, and no doubt never will be found in such immense quantities as to produce death in school rooms; but it *is* found in sufficient quantities, in a large majority of school rooms, as to act as a slow poison from day to day, during a large portion of the scholars' school life, in proportion to the quantity of  $\text{CO}_2$  present, and the corresponding restrictions on the natural supply of fresh air.

The question of where the carbon dioxide prevails in the largest quantities, in school rooms, has long since been a mooted question. The old authors, as well as public opinion, placed it at the *top* of the room; and as a result of their belief, advised making provisions for its escape at or near the ceiling. On the other hand, the more recent writers affirmed that it prevailed in the greatest quantities at or near the *floor*, of a given room; and cited you to the fact that it was heavier than air, and of necessity must accumulate at the bottom; and produced as evidence to prove their theory, the old cave story—in which a man can walk with impunity, while his dog would be asphyxiated with carbon dioxide, which they backed with the experiment of the model house, in which a large, medium and short lighted candle was placed, and the air excluded—when the short candle would go out first, the medium next and the long candle

last. But you must remember that in neither of these cases, is there any circulation of air, and, consequently, barring the law of diffusion of gases, there is nothing to intermix the  $\text{CO}_2$  with the sundry stratum of air, and modify the natural laws of gravitation. On the other hand, we have quite a different condition of affairs in the school room, which modify the primary laws of gravity, and which give us entirely different results than the imaginary attributes from which we have heretofore woven our theoretic web of supposed conditions regarding the  $\text{CO}_2$ , which, however, in fact did not exist, as you will observe by a careful study of the charts and tables which accompany this report.

By turning to Table No. 6, you will observe that the highest average of  $\text{CO}_2$  found associated with any particular system of heating and ventilation, in the *front* of the room at the level of the floor, was 19.127 parts per 10,000, and the lowest average was 8.754; whilst at the *mouth* the highest average was found to be 17.499, and the lowest at the same level was 9.557; and at the *ceiling* the highest average was found to be 16.493, and the lowest 9.914; which only shows a difference of 1.160 parts in 10,000, between the lowest average at the floor and the lowest average at the ceiling, in favor of the ceiling; and only 2.634 parts between the highest average at the floor, and the highest average at the ceiling, in favor of the floor.

Again, in the *rear* of the room, the highest average of  $\text{CO}_2$  at the floor was 16.671, and the lowest 10.240; whilst at the mouth it was 16.971 against 10.285, and at the ceiling 18.223, as compared with 9.751; with only a fraction of .489 difference between the lowest average at the mouth and the lowest average at the ceiling, in favor of the latter; whilst the difference between the highest average at the ceiling, and the highest average at the floor, was only 1.552 in favor of the ceiling. But go with me, if you please to Table No. 5, and there turn to the grand average of the four cities, taken from two hundred and twenty-four determinations, and you will find that there is only a fraction of a difference between the amount of  $\text{CO}_2$  at any level of the room, either at the rear or front; which grand average shows in the front of the rooms 13.137 at the floor, and 13.785 at the mouth, and 13.064 at the ceiling. Whilst in the rear of the rooms, it shows 14.350 at the floor, 13.651 at the mouth, and 13.912 at the ceiling; or, in other words, only the fraction of .075 difference between the floor and the ceiling in the front of the rooms, in favor of the floor; and but .438 difference between the floor and the ceiling at the rear of the rooms, in favor of the former.

It seems to me that this investigation ought to settle, without a question, the problem regarding the location of the  $\text{CO}_2$  in the school rooms of to-day, and especially those which are heated artificially, and to prove beyond a shadow of a doubt, that  $\text{CO}_2$  is an omnipresent factor, in practically the same relative proportions at all levels of a school room, whether ventilated at the top, sides or the bottom, or all.

TABLE III.

Showing the highest and lowest temperature and the highest and lowest humidity inside the school rooms, together with the average of the same by cities.

| Location                                                                       | TEMPERATURE, FRONT OF ROOM. |               |                 | TEMPERATURE, REAR OF ROOM. |               | HUMIDITY, FRONT OF ROOM. |               | HUMIDITY, REAR OF ROOM. |               | Total number of examinations made. |
|--------------------------------------------------------------------------------|-----------------------------|---------------|-----------------|----------------------------|---------------|--------------------------|---------------|-------------------------|---------------|------------------------------------|
|                                                                                | At the floor.               | At the mouth. | At the ceiling. | At the floor.              | At the mouth. | At the floor.            | At the mouth. | At the floor.           | At the mouth. |                                    |
| Mansfield, Ohio.                                                               | Highest.                    | 73.8          | 92.5            | 68.5                       | 72.5          | 56.6                     | 49.0          | 46.8                    | 53.9          | 10                                 |
|                                                                                | Lowest.                     | 57.5          | 63.5            | 61.0                       | 61.5          | 36.1                     | 23.5          | 12.9                    | 34.0          |                                    |
|                                                                                | Average.                    | 62.5          | 57.7            | 61.9                       | 66.5          | 43.3                     | 40.0          | 25.1                    | 42.4          |                                    |
| Cleveland, Ohio.                                                               | Highest.                    | 73.0          | 81.9            | 70.5                       | 75.5          | 39.8                     | 39.3          | 31.4                    | 45.4          | 7                                  |
|                                                                                | Lowest.                     | 63.5          | 67.0            | 65.0                       | 67.0          | 24.0                     | 23.7          | 14.6                    | 32.1          |                                    |
|                                                                                | Average.                    | 69.5          | 71.9            | 67.8                       | 70.9          | 33.5                     | 33.6          | 23.9                    | 37.2          |                                    |
| Columbus, Ohio.                                                                | Highest.                    | 67.0          | 69.5            | 68.3                       | 68.0          | 53.0                     | 45.7          | 43.7                    | 48.7          | 4                                  |
|                                                                                | Lowest.                     | 63.5          | 67.4            | 66.2                       | 64.0          | 45.0                     | 42.4          | 29.9                    | 38.1          |                                    |
|                                                                                | Average.                    | 65.1          | 68.2            | 69.1                       | 66.5          | 49.3                     | 43.6          | 36.0                    | 42.0          |                                    |
| Cincinnati, Ohio.                                                              | Highest.                    | 73.5          | 74.5            | 74.5                       | 74.0          | 37.3                     | 37.3          | 37.5                    | 37.1          | 18                                 |
|                                                                                | Lowest.                     | 63.0          | 68.1            | 63.5                       | 68.0          | 28.5                     | 28.5          | 22.9                    | 25.6          |                                    |
|                                                                                | Average.                    | 68.3          | 68.6            | 69.0                       | 68.8          | 35.0                     | 33.2          | 43.4                    | 31.1          |                                    |
| Total                                                                          |                             |               |                 |                            |               |                          |               |                         |               |                                    |
| Grand average for the four cities above named out of thirty-nine examinations. | Highest.                    | 60.5          | 79.7            | 68.8                       | 70.9          | 55.0                     | 53.2          | 43.4                    | 51.1          | 39                                 |
|                                                                                | Lowest.                     | 62.5          | 67.7            | 61.9                       | 66.5          | 33.5                     | 33.6          | 23.9                    | 37.2          |                                    |
|                                                                                | Average.                    | 66.2          | 69.1            | 65.9                       | 68.2          | 45.2                     | 42.6          | 32.1                    | 43.8          |                                    |

Total number of temperatures taken in the four cities 232.

Total number of humidities taken in the four cities, 235.



TABLE IV.

Showing the highest and lowest temperature and the highest and lowest humidity inside the school rooms, together with the average of the same.

|          | TEMPERATURE, FRONT OF ROOM. |               |                 | TEMPERATURE, REAR OF ROOM. |               |                 | HUMIDITY, FRONT OF ROOM. |               |                 | HUMIDITY, REAR OF ROOM. |               |                 | Total number of examinations made. |
|----------|-----------------------------|---------------|-----------------|----------------------------|---------------|-----------------|--------------------------|---------------|-----------------|-------------------------|---------------|-----------------|------------------------------------|
|          | At the floor.               | At the mouth. | At the ceiling. | At the floor.              | At the mouth. | At the ceiling. | At the floor.            | At the mouth. | At the ceiling. | At the floor.           | At the mouth. | At the ceiling. |                                    |
| Highest. | 72.3                        | 73.5          | 85.0            | 73.5                       | 74.0          | 90.0            | 67.8                     | 61.8          | 66.5            | 66.5                    | 69.6          | 65.2            | 11                                 |
| Lowest.  | 63.0                        | 63.1          | 68.0            | 60.5                       | 64.0          | 67.0            | 56.1                     | 58.2          | 58.2            | 59.5                    | 59.1          | 57.0            |                                    |
| Average. | 68.5                        | 67.3          | 74.3            | 66.4                       | 68.1          | 74.9            | 48.3                     | 46.1          | 53.5            | 50.5                    | 50.1          | 47.0            |                                    |
| Highest. | 73.5                        | 76.0          | 81.9            | 74.5                       | 73.5          | 81.0            | 58.5                     | 56.3          | 67.5            | 67.5                    | 67.9          | 61.6            | 11                                 |
| Lowest.  | 64.0                        | 66.5          | 76.0            | 62.5                       | 68.6          | 70.7            | 58.5                     | 56.8          | 62.0            | 59.2                    | 58.3          | 56.6            |                                    |
| Average. | 68.2                        | 70.0          | 71.8            | 67.0                       | 72.1          | 73.5            | 57.9                     | 56.4          | 64.7            | 60.8                    | 61.5          | 54.4            |                                    |
| Highest. | 71.8                        | 72.5          | 77.0            | 72.0                       | 73.1          | 79.5            | 63.5                     | 63.5          | 65.1            | 65.3                    | 68.0          | 64.8            | 5                                  |
| Lowest.  | 63.5                        | 63.1          | 69.1            | 62.0                       | 68.0          | 69.2            | 56.0                     | 40.5          | 53.0            | 40.1                    | 37.5          | 34.4            |                                    |
| Average. | 68.5                        | 69.1          | 73.2            | 68.8                       | 69.6          | 71.5            | 49.0                     | 50.7          | 42.7            | 48.7                    | 49.6          | 45.0            |                                    |
| Highest. | 71.0                        | 72.0          | 76.0            | 70.0                       | 71.5          | 76.5            | 61.6                     | 53.0          | 63.2            | 58.1                    | 53.6          | 44.4            | 3                                  |
| Lowest.  | 66.5                        | 67.0          | 74.0            | 65.0                       | 67.0          | 75.0            | 24.0                     | 26.7          | 26.2            | 32.0                    | 32.9          | 20.4            |                                    |
| Average. | 68.8                        | 70.0          | 75.1            | 67.6                       | 69.8          | 75.8            | 27.5                     | 29.4          | 19.8            | 35.0                    | 33.3          | 21.9            |                                    |
| Highest. | 73.0                        | 71.0          | 92.5            | 68.0                       | 71.0          | 84.0            | 55.6                     | 42.7          | 62.8            | 49.3                    | 48.1          | 33.7            | 3                                  |
| Lowest.  | 57.5                        | 63.5          | 69.0            | 54.0                       | 61.5          | 70.0            | 38.7                     | 36.7          | 18.8            | 46.8                    | 46.1          | 23.8            |                                    |
| Average. | 62.8                        | 70.2          | 80.3            | 60.3                       | 66.2          | 77.0            | 46.2                     | 39.7          | 20.2            | 45.4                    | 45.9          | 28.1            | 2                                  |
| Highest. | 67.5                        | 71.5          | 77.0            | 67.2                       | 70.5          | 85.5            | 58.5                     | 53.3          | 67.6            | 62.9                    | 64.4          | 54.1            |                                    |
| Lowest.  | 67.0                        | 69.0          | 76.5            | 66.5                       | 70.0          | 71.0            | 39.2                     | 39.1          | 27.6            | 32.9                    | 34.4          | 24.1            |                                    |
| Average. | 67.2                        | 70.2          | 76.7            | 66.8                       | 70.2          | 81.2            | 39.5                     | 39.2          | 29.5            | 39.1                    | 35.1          | 26.1            |                                    |
| Highest. | 70.2                        | 70.2          | 76.7            | 66.8                       | 70.2          | 81.2            | 39.5                     | 39.2          | 29.5            | 39.1                    | 35.1          | 26.1            | 1                                  |
| Lowest.  | 60.0                        | 64.0          | 73.0            | 62.0                       | 65.5          | 90.0            | 41.7                     | 40.5          | 20.9            | 42.2                    | 42.3          | 16.5            |                                    |
| Average. | 66.0                        | 67.0          | 74.5            | 64.5                       | 69.2          | 74.5            | 61.2                     | 41.5          | 49.2            | 25.6                    | 38.8          | 24.4            | 1                                  |
| Highest. | 65.0                        | 67.0          | 74.5            | 64.5                       | 69.2          | 74.5            | 61.2                     | 41.5          | 49.2            | 25.6                    | 38.8          | 24.4            | 1                                  |
| Lowest.  | 65.0                        | 67.0          | 74.5            | 64.5                       | 69.2          | 74.5            | 61.2                     | 41.5          | 49.2            | 25.6                    | 38.8          | 24.4            | 1                                  |
| Average. | 65.0                        | 67.0          | 74.5            | 64.5                       | 69.2          | 74.5            | 61.2                     | 41.5          | 49.2            | 25.6                    | 38.8          | 24.4            | 1                                  |
| Highest. | 69.5                        | 73.8          | 85.0            | 58.0                       | 68.2          | 88.0            | 41.2                     | 33.0          | 20.1            | 42.1                    | 36.5          | 18.9            | 1                                  |
| Lowest.  | 69.5                        | 73.8          | 85.0            | 58.0                       | 68.2          | 88.0            | 41.2                     | 33.0          | 20.1            | 42.1                    | 36.5          | 18.9            | 1                                  |
| Average. | 69.5                        | 73.8          | 85.0            | 58.0                       | 68.2          | 88.0            | 41.2                     | 33.0          | 20.1            | 42.1                    | 36.5          | 18.9            | 1                                  |
| Highest. | 69.5                        | 73.8          | 85.0            | 58.0                       | 68.2          | 88.0            | 41.2                     | 33.0          | 20.1            | 42.1                    | 36.5          | 18.9            | 1                                  |
| Lowest.  | 69.5                        | 73.8          | 85.0            | 58.0                       | 68.2          | 88.0            | 41.2                     | 33.0          | 20.1            | 42.1                    | 36.5          | 18.9            | 1                                  |
| Average. | 69.5                        | 73.8          | 85.0            | 58.0                       | 68.2          | 88.0            | 41.2                     | 33.0          | 20.1            | 42.1                    | 36.5          | 18.9            | 1                                  |
| Total.   | 63.5                        | 69.5          | 77.0            | 60.0                       | 64.0          | 79.0            | 53.9                     | 45.7          | 31.4            | 39.2                    | 38.5          | 31.7            | 89                                 |

Total number of humidities taken on all the systems, 233.

Total number of temperature taken on all the systems, 232.



TABLE V,

Showing the highest and lowest amount of carbon dioxide per 10,000 parts inside the school room, and the average of the same, together with the amount of CO<sub>2</sub> per 10,000 parts in the city air, by cities.

| LOCATION.                                                                     | Amount of carbon dioxide found in the air per 10,000 parts. | AMOUNT OF CARBON DIOXIDE PER 10,000 PARTS, FRONT OF ROOM. |                            |                              | AMOUNT OF CARBON DIOXIDE PER 10,000 PARTS, REAR OF ROOM. |                            |                              | Total number of examinations made. |
|-------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------|----------------------------|------------------------------|----------------------------------------------------------|----------------------------|------------------------------|------------------------------------|
|                                                                               |                                                             | At the level of the floor.                                | At the level of the mouth. | At the level of the ceiling. | At the level of the floor.                               | At the level of the mouth. | At the level of the ceiling. |                                    |
| Mansfield, Ohio.                                                              | Highest. . . . .                                            | 21.435                                                    | 21.742                     | 24.727                       | 28.281                                                   | 21.875                     | 25.690                       | 10                                 |
|                                                                               | Lowest. . . . .                                             | 11.104                                                    | 9.855                      | 9.914                        | 11.318                                                   | 10.016                     | 11.473                       |                                    |
|                                                                               | Average. . . . .                                            | 15.478                                                    | 15.310                     | 15.923                       | 17.391                                                   | 16.240                     | 16.642                       |                                    |
| Cleveland, Ohio.                                                              | Highest. . . . .                                            | 17.560                                                    | 16.997                     | 17.605                       | 17.792                                                   | 17.160                     | 16.275                       | 7                                  |
|                                                                               | Lowest. . . . .                                             | 12.085                                                    | 12.085                     | 13.000                       | 13.181                                                   | 10.263                     | 19.363                       |                                    |
|                                                                               | Average. . . . .                                            | 12.506                                                    | 12.424                     | 12.335                       | 16.434                                                   | 13.349                     | 13.897                       |                                    |
| Columbus, Ohio.                                                               | Highest. . . . .                                            | 14.220                                                    | 15.772                     | 15.102                       | 16.637                                                   | 15.659                     | 14.300                       | 4                                  |
|                                                                               | Lowest. . . . .                                             | 10.705                                                    | 11.253                     | 9.239                        | 10.252                                                   | 10.285                     | 9.751                        |                                    |
|                                                                               | Average. . . . .                                            | 12.826                                                    | 14.531                     | 11.228                       | 14.219                                                   | 13.048                     | 12.667                       |                                    |
| Cincinnati, Ohio.                                                             | Highest. . . . .                                            | 14.765                                                    | 16.391                     | 16.610                       | 19.388                                                   | 16.765                     | 19.228                       | 18                                 |
|                                                                               | Lowest. . . . .                                             | 8.324                                                     | 10.158                     | 7.196                        | 7.142                                                    | 7.261                      | 7.400                        |                                    |
|                                                                               | Average. . . . .                                            | 11.740                                                    | 12.878                     | 12.770                       | 12.357                                                   | 11.859                     | 12.442                       |                                    |
| Total. . . . .                                                                |                                                             |                                                           |                            |                              |                                                          |                            |                              | 39                                 |
| Grand average for the four cities above named out of 39 examinations. . . . . |                                                             | 15.478                                                    | 15.310                     | 15.923                       | 17.391                                                   | 16.240                     | 16.642                       |                                    |
|                                                                               |                                                             | 11.740                                                    | 12.424                     | 11.228                       | 12.357                                                   | 11.859                     | 12.442                       |                                    |
|                                                                               |                                                             | 13.137                                                    | 13.785                     | 13.064                       | 14.350                                                   | 13.651                     | 13.912                       |                                    |

Total number of CO<sub>2</sub> determinations taken in the four cities, 224.

TABLE VI.

Showing the highest and lowest amount of carbon dioxide per 10,000 parts inside the schoolroom, and the average of the same, by system.

|                                                          | AMOUNT OF CARBON DIOXIDE PER 10,000 PARTS, FRONT OF ROOM. |                            |                              | AMOUNT OF CARBON DIOXIDE PER 10,000 PARTS, REAR OF ROOM. |                            |                              | Total number of examinations made. |
|----------------------------------------------------------|-----------------------------------------------------------|----------------------------|------------------------------|----------------------------------------------------------|----------------------------|------------------------------|------------------------------------|
|                                                          | At the level of the floor.                                | At the level of the mouth. | At the level of the ceiling. | At the level of the floor.                               | At the level of the mouth. | At the level of the ceiling. |                                    |
| Grossus system (with open windows, etc.).                | Highest, . . . . . 21.495                                 | 21.742                     | 24.727                       | 28.231                                                   | 21.875                     | 25.690                       | 11                                 |
|                                                          | Lowest, . . . . . 6.741                                   | 10.768                     | 7.196                        | 7.142                                                    | 7.261                      | 7.430                        |                                    |
|                                                          | Average, . . . . . 12.951                                 | 15.294                     | 14.773                       | 14.500                                                   | 14.085                     | 14.068                       |                                    |
| Snead system (with no open windows or transoms).         | Highest, . . . . . 15.700                                 | 16.610                     | 16.772                       | 19.388                                                   | 16.765                     | 19.228                       | 11                                 |
|                                                          | Lowest, . . . . . 10.769                                  | 11.255                     | 9.239                        | 11.750                                                   | 10.016                     | 10.824                       |                                    |
|                                                          | Average, . . . . . 13.437                                 | 14.216                     | 13.219                       | 14.685                                                   | 13.632                     | 14.005                       |                                    |
| Johnson system (with open windows, etc.).                | Highest, . . . . . 14.130                                 | 16.991                     | 16.130                       | 16.741                                                   | 14.131                     | 14.834                       | 5                                  |
|                                                          | Lowest, . . . . . 9.669                                   | 10.158                     | 12.556                       | 12.577                                                   | 10.178                     | 10.025                       |                                    |
|                                                          | Average, . . . . . 10.352                                 | 12.587                     | 12.580                       | 12.597                                                   | 10.841                     | 11.972                       |                                    |
| Indirect steam (with open windows, etc.).                | Highest, . . . . . 11.812                                 | 17.860                     | 11.181                       | 12.881                                                   | 14.731                     | 16.275                       | 3                                  |
|                                                          | Lowest, . . . . . 6.694                                   | 7.065                      | 10.001                       | 8.181                                                    | 10.268                     | 9.363                        |                                    |
|                                                          | Average, . . . . . 8.754                                  | 9.567                      | 10.647                       | 10.240                                                   | 12.473                     | 12.096                       |                                    |
| Common stove (with open windows, etc.).                  | Highest, . . . . . 13.872                                 | 12.378                     | 13.926                       | 16.098                                                   | 15.391                     | 15.733                       | 3                                  |
|                                                          | Lowest, . . . . . 11.104                                  | 9.855                      | 10.416                       | 11.318                                                   | 11.001                     | 11.473                       |                                    |
|                                                          | Average, . . . . . 12.683                                 | 10.802                     | 11.911                       | 14.442                                                   | 13.173                     | 13.534                       |                                    |
| Direct steam (with open windows, etc.).                  | Highest, . . . . . 17.560                                 | 16.997                     | 17.505                       | 17.792                                                   | 17.160                     | 15.277                       | 2                                  |
|                                                          | Lowest, . . . . . 14.401                                  | 16.753                     | 14.065                       | 15.550                                                   | 14.156                     | 14.682                       |                                    |
|                                                          | Average, . . . . . 15.980                                 | 16.875                     | 15.795                       | 16.671                                                   | 15.658                     | 14.979                       |                                    |
| Pacific furnace (with open windows, etc.).               | Highest, . . . . . . . . .                                | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    | 1                                  |
|                                                          | Lowest, . . . . . 19.127                                  | 17.499                     | 16.493                       | 16.418                                                   | 16.971                     | 18.223                       |                                    |
|                                                          | Average, . . . . . . . . .                                | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    |                                    |
| Miller furnace (with open windows, etc.).                | Highest, . . . . . . . . .                                | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    | 1                                  |
|                                                          | Lowest, . . . . . 10.392                                  | Lost                       | 13.682                       | 13.286                                                   | Lost                       | 14.221                       |                                    |
|                                                          | Average, . . . . . . . . .                                | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    |                                    |
| Direct steam, with open grate (with open windows, etc.). | Highest, . . . . . 12.425                                 | 11.847                     | 9.914                        | 11.751                                                   | 14.401                     | 14.132                       | 1                                  |
|                                                          | Lowest, . . . . . . . . .                                 | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    |                                    |
| Direct and indirect steam (with open windows, etc.).     | Highest, . . . . . 10.705                                 | 11.253                     | 10.222                       | 10.252                                                   | 10.285                     | 9.751                        | 1                                  |
|                                                          | Lowest, . . . . . . . . .                                 | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    |                                    |
|                                                          | Average, . . . . . . . . .                                | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    |                                    |
| Total.                                                   | . . . . .                                                 | . . . . .                  | . . . . .                    | . . . . .                                                | . . . . .                  | . . . . .                    | 39                                 |

Total number CO<sub>2</sub> determinations taken on all the systems. 224.

## GENERAL REMARKS.

The next important question that confronts us, after having obtained all this "array of facts and figures," is—how shall we proceed to heat and ventilate our school rooms in the most sanitary, economical practically and scientific manner? In answer to these questions I will say:

1st. That to heat and ventilate our school rooms in the most *scientific* manner will require a system of heating and ventilation which will avoid the necessity of having either open doors, windows or transoms, and which will at the same time supply each scholar with not less than 1,000 cubic feet of fresh air every hour, and which will remove a corresponding quantity of foul air at the same time, without subjecting any scholar in the room to an uncomfortable draught of either cold or over-heated air. Sufficient fresh warm air should be supplied to each scholar, at an average temperature of about  $70^{\circ}$ , and an average humidity ranging from 40 to 50; whilst the foul air should be removed sufficiently rapid as to prevent an accumulation of  $\text{CO}_2$  to exceed 10 parts in 10,000 parts of air at any time, or in any part of the room, or a variation of the temperature between the floor and the ceiling to exceed  $10^{\circ}$  Fahr., or at any level of the same between the front and the rear, or either, to exceed  $5^{\circ}$  Fahr.

2d. To accomplish these results in the most *economical* manner will require an air warmer, with sufficient capacity to heat the required amount of air to the desired temperature without superheating it (for under no circumstances should it be allowed to pass over red-hot iron plates); and which fresh warm air should be discharged in a gentle current at the floor, and exhausted at the same level at the sides of the room, without the assistance of a top ventilator or the aid of an open door, window or transom. But if the top ventilators *are* used at all, they should only be used to cool the room, in the event it became *over* heated from any cause; outside of this they are of no value whatever, except to wantonly waste our heat and fuel, without giving us any advantages in return for their loss.

3d. I am fully aware of the fact, that it is usually a very difficult task to realize, in a practical manner, the theories that fill us with enthusiasm when demonstrated on paper; and, further, that there is perhaps *no* system of heating and ventilation in use at the present time, that is capable of carrying out in every particular, under all possible circumstances, the ideal heating and ventilating of the average school room, yet after years of investigation, and examining scores of different kinds of heating and ventilating apparatus, without "either fear or favor" to any one, I am thoroughly convinced that there is no system of heating and ventilating at the present time that will come so *near* fulfilling the requirements of the ideal methods of accomplishing these results, in the most sanitary, economic, practical, scientific manner, as the so-called Smead system. In making the above assertion, I do so in all candor, and with-

out personal favor, or intentional disparagement to any one, but simply as the legitimate conclusion I have derived from actual facts, obtained from repeated personal and scientific investigations.

#### CONCLUSION.

I trust you will pardon the prosy character of this report, which is largely composed of "facts and figures," which to obtain, has been a tedious, irksome and an expensive task. Yet if only it serves the purpose of securing a better heated and more liberal supply of God's pure air to the rising generations, who spend (from a hygienic standpoint at least) the very best and most important part of their lives in our public and private schools. I will feel that all my labors have been fully repaid.

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#### The Construction of School Buildings.

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By D. F. LINCOLN, M. D., of Geneva, N. Y., Chairman of the Committee of School Hygiene of the American Medical Association.

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In dealing with this question, we are obliged to make allowance for difference in circumstances. We demand space, fresh air, light; and these needful things undeniably cost money. The poorer and less enlightened communities will grudge payment even for such necessities of life; but the number must be very small of those who have not a disposition to improve and a willingness to make some sacrifice. The burden does not always fall heaviest upon the poor districts; land costs next to nothing in the country, and the struggle for elbow-room between tall overshadowing buildings is unknown, while in rich cities it may happen that the millions appropriated for public schools are as inadequate as the hundreds granted by a country district.

The city school is greatly restricted in the space available for building; and in no city is this difficulty more pressing than in New York. Without assuming the right to condemn any one's omissions, we may still be permitted to offer suggestions which may meet with appreciation in certain quarters.

The suggestion, then, which is first offered, is to this effect that it would be well if the space surrounding each school house could be at the outset ample for the purpose of supplying light, and that regulations might be made to prevent encroachments upon the sky area. It could be ordered, for instance, that the width of such space be made equal to the height of buildings now standing, or likely to be erected, in contiguity; and that the height of such future adjoining edifices should be



restricted. It may be difficult to anticipate the future. But surely we need not commit the blunder of allowing only a six or ten foot passage at the side of the school house—of which it would be easy to point out examples.

To the recommendation of a liberal ground space may be added another of kindred character; that of moderate size and height in the edifice. The reasons for this are various. On the one hand, there are objections to the massing of great numbers of children; there is the difficulty of management to be considered, and other matters, the discussion of which may be omitted here. Apart from this, there are objections to the great compact house, the central parts of which are remote from the freshness of the outer air and the beneficial effect of sunlight. Then there is the objection to many-storied buildings, on the ground of loss of time in passing scholars to and from the yards at recess, and on the further ground of occasional injury to the system in the case of girls in their teens, at the period of sexual development.

The safety of the inmates in case of fire should be insured by suitable arrangements of stairs, and by strict drill. I cannot approve of the ladders or twisting stairs of iron openwork clamped to the outside of the building, as a refuge for a crowd of panic-stricken children. Safety requires that the ordinary staircases be planned so as to be incombustible, and that they should present no impediment or trap for the foot, such as spiral curves, narrow-cornered steps, steepness or dark passages. Stairways ought to be so placed that every room has access to more than one, in different directions.

*Lighting.*—The best opinions at present, in this country, seem to agree in preferring light which enters from the left side of the pupils, and in absolutely objecting to that which enters in front. Whether light should be admitted from the right hand or the rear cannot be categorically stated; in some circumstances (as in the case of small country school houses) it seems a desirable addition to the left-hand light.

There are two mistakes, against which serious warning should be given. One is the placing of windows at a low point, for architectural or other esthetic reasons. The best place for the light to enter the room is the highest point attainable. Windows should nearly touch the ceiling, and their upper part should be as free as possible from incumbrances which obstruct light. The other mistake referred to is the attempt to light very wide rooms of moderate height by side windows. The poverty of light in such cases is not to be estimated by the ordinary standards, or by one's impressions, but by observing the way in which the horizontal rays of light fall on a book placed flat on the desk as for study.

Verandas are fatal to good working light. The "Italian" awning is nearly as bad. In general, no form of curtain or other screen covering the upper part of a window is allowable except on the ground of strict



necessity. If shades are required to exclude the sun, they must be removable when not needed.

The eye should be favored by avoiding the glaring effect of pure white walls; a slight neutral tint, or bluish or greenish, is preferable. The ceiling, however, may be as white as possible.

*School rooms.*—Their dimensions are partly dependent on the requirements of ventilation. It may be added, that their length is limited by the distance at which the ordinary eye can read ordinary work on the blackboard, or not greatly over thirty feet. The width should not exceed the moderate dimensions which are compatible with good lighting—from twenty-two to twenty-five feet if light comes from one side.

The floors should everywhere be made of material which can be washed conveniently—a wood which will not splinter or wear ragged.

*Seats and desks.*—The American patterns in common use are at least comfortable—from one point of view. The chairs are very easy to sit back in when one is tired. In this they differ widely from the accepted patterns of the European schools, whose children are taught to sit up straight, and are furnished with short-backed seats which support the hips sufficiently, but not the shoulders. These models are strange, to our eyes, and there is little chance of our rocking-chair-loving race adopting them at present. They possess obvious merit, however.

From the Germans we have learned that the front edge of the desk must reach or overhang the edge of the seat. This principle is commonly imitated among us. What we have not yet seen fit to adopt is the no less rational principle that the desk should not crowd the arms and elbows upward. The arms ought to hang so freely that the elbows, when writing is going on, are at the level of the desk. In no other way can we insure a correct—*i. e.* a straight and squared—position in writing.

In conclusion, let me say that a number of points have been left untouched in this paper, which might properly have been treated of, as related to the general subject of construction. This is due to the fact that a special assignment of the subject of drainage and sewage has been made by which it is placed in the hands of another member of the committee; his work is expected at the next annual meeting.

#### 4—PROCEEDINGS OF THE FIFTH STATE SANITARY CONVENTION OF PENNSYLVANIA.

HELD AT ALTOONA, *May 15 and 16, 1891.*

##### Officers.

##### Programme.

Annual Address, by Samuel G. Dixon, M. D.

Should Tuberculosis be made Returnable to the Board of Health, by L. F. Flick, M. D.

The Ostrich and the Camel; or how Some People Treat Epidemics, by Charles McIntire, M. D.

The Difficulties Encountered by a State Officer in Enforcing Quarantine in Rural Districts, by Spencer M. Free, M. D.

Water Supply in Mountain Towns, by C. B. Dudley, M. D.

Information from the Records of the Altoona Board of Health, by C. H. Closson, M. D.

Some Neglected Points in Railroad Sanitation, by H. R. Smith, M. D.

##### OFFICERS OF THE CONVENTION.

President, Hon. John Dean, judge court of common pleas, Blair County; first vice president, Theo. N. Ely, general superintendent motive power, Pennsylvania Railroad Company; second vice president, Dr. M. L. Davis, president Lancaster County Medical Society.

##### *Honorary Vice Presidents.*

*Local*—Mr. F. L. Sheppard, general superintendent Pennsylvania Railroad Company; Mr. J. M. Wallis, superintendent motive power, Pennsylvania Railroad Company; Mr. W. L. Bannard, superintendent Altoona division, Pennsylvania Railroad Company; Mr. John Lloyd, Altoona; Mr. H. C. Dern, Altoona; Mr. D. S. Keith, superintendent of schools, Altoona; John Fay, M. D., Altoona; Mr. G. W. Strattan, master mechanic, Pennsylvania Railroad machine shops, Altoona; Mr. L. B. Reifsnider, president school board, Altoona; Mr. H. A. McPike, Altoona; Mr. Thomas Moore, president select council, Altoona; Hon. David Kinch, ex-mayor of Altoona; Mr. John P. Levan, general foreman Pennsylvania car shops, Altoona; Mr. W. H. Schwartz, Altoona; Mr. W. R. Dunham, Altoona; Mr. S. M. Hoyer, Altoona; Mr. Theo. J. Burchfield, mayor of Altoona; Mr. J. K. Patterson, president common council, Altoona; Mr. George F. Fresh, Altoona; Mr. Paul Kreuzpointner, Altoona; Mr. Theo. J. Nigeten, Altoona.

*Legislative*—Hon. Boies Penrose, President *pro tem.* Senate; Hon. Charles Moore, Pottstown.

*Members of Committee on Public Health and Sanitation*—Hon. J. B. Showalter, Senate; Hon. A. D. Markley, Senate; Hon. N. B. Critchfield, Senate; Hon. Wm. H. McCullough, House of Representatives; Hon. Andrew S. Stayer, House of Representatives; Hon. P. S. Weber, House of Representatives; Hon. S. S. Towler, House of Representatives; Hon. H. N. Hess, House of Representatives; Hon. J. H. Lafferty, House of Representatives; Hon. J. Wilson Morrow, House of Representatives; Hon. Henry F. Walton, House of Representatives; Hon. Joseph G. West, House of Representatives; Hon. Peter J. Criste, House of Representatives.

*Secretary*—Dr. William B. Atkinson, honorary professor of hygiene, Medico-Chirurgical College, Philadelphia.

*Assistant Secretary*—Dr. C. H. Closson, secretary board of health of Altoona.

*Committee of State Board of Health*—Dr. Samuel T. Davis, Dr. J. H. McClelland, Dr. Benjamin Lee

*Committee of the Altoona Board of Health*—Dr. J. U. Blose, Dr. J. W. Rowe, Mr. Joseph Nixon.

*Reception Committee*—Harry Dunham, chairman; Hon. J. W. Curry, Capt. Robert Johnson.

Music by Neff's Orchestra.

#### PROGRAMME.

*First Session—Friday, May 15, at 10 a. m.*

#### SANITARY LEGISLATION.

1. Convention called to order by the president.
2. Prayer by the Rev. A. S. Woodle.
3. Music.
4. Address of welcome by His Honor Theodore J. Burchfield, mayor of Altoona.
5. Response to the address of welcome, by Prof. George G. Groff, M. D., LL. D., president of the State Board of Health of Pennsylvania.
6. Opening remarks, by Dr. Pemberton Dudley, professor of hygiene, Hahnemann Medical College, Philadelphia, member of State Board of Health.
7. Music.
8. "The Powers and Limitations of Borough and Municipal Authorities in Promoting the Public Health," by the Hon. John Dean of Hollidaysburg.
9. Discussion.
10. "Sanitary Science Demands an Educated Medical Profession," by Dr. George W. Wagoner of Johnstown.
11. Discussion.
12. Music.

*Second Session—Friday, May 15, at 2:30 p. m.*

GENERAL SANITATION.

1. Music.
2. "The Ostrich and the Camel," by Dr. Charles McIntire, Jr., medical inspector to the State Board of Health for the Lehigh district.
3. "The Necessity for Sanitary Inspection of the Rural Districts of the State," by Dr. Daniel B. D. Beaver of Reading.
4. "The Earth Closet in Country and Towns," by Prof. Geo. G. Groff of Lewisburg, president of the State Board of Health.
5. Discussion on the above papers, opened by Paul Krentzpointner.
6. Music.
7. "Should Tuberculosis (Consumption) be placed upon the List of Diseases to be Reported to Boards of Health?" by Dr. Lawrence F. Flick of Philadelphia.
8. Discussion, opened by Dr. W. M. Findley.
9. "Some Neglected Points in Railroad Sanitation," by Dr. Horace Smith, medical examiner Pennsylvania Railroad Relief Fund.
10. Discussion, opened by Dr. W. I. Bishop, surgeon Pennsylvania Railroad Company, Harrisburg.
11. Music.

*Third Session—Friday, May 15, at 8 p. m.*

1. Music.
2. The annual address before the State Board of Health, by Dr. Samuel G. Dixon of Philadelphia, professor of hygiene in the University of Pennsylvania; subject, "Tuberculosis."
3. Music
4. "Garbage Cremation," by Dr. M. L. Davis, president of the Lancaster County Medical Society.  
These papers will be illustrated with the stereopticon.
5. Discussion
6. Music.

*Fourth Session—Saturday, May 16, at 10 a. m.*

LOCAL SANITATION—WATER SUPPLY, SEWERAGE AND QUARANTINE.

1. Music.
2. "The Sewer System of Altoona, with a Proposed Method of Sewage Disposal," by Harvey Linton, city engineer of Altoona
3. Discussion.
4. "The Difficulties Encountered by a State Officer in Enforcing Quarantine in the Rural Districts," by Dr. Spencer M. Free, medical inspector Western Slope district, Beechtree
5. Music.

6. "Information from the Records of the Altoona Board of Health," by Dr. C. H. Closson, secretary of the Board.

7. "Water Supply in Mountain Towns, with Especial Reference to the Altoona Water Supply," by Dr. Charles B. Dudley, medical inspector to the State Board of Health for the Central district.

8. "A Demonstration of the Purification of Water by Metallic Iron," by Prof. Henry Leffmann, food analyst to the State Board of Health of Pennsylvania.

9. Discussion.

10. Voluntary paper

11. Music.

12. Adjournment.

Through the courtesy of the Pennsylvania Railroad Company, a special train will be in readiness at 3 o'clock p. m., to afford the members an opportunity of viewing the magnificent scenery of the Bell's Gap railroad.

The headquarters of the board will be at the Logan House.

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#### Annual Address before the State Board of Health of Pennsylvania.

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By SAMUEL G. DIXON, M. D., *Professor of Hygiene in the University of Pennsylvania.*

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GENTLEMEN: Before entering upon the important topics which I propose to discuss before you this evening, I will take the first opportunity that presents itself of expressing the great pleasure and honor which I experience in having been requested to deliver the address before a body of gentlemen whose high function it is to act as the guardians of the health of the people of this great state, and to keep a vigilant eye upon all measures, which, whether local or general in their application, are calculated, in your judgment, either favorably or adversely, to affect the public health.

It is difficult, gentlemen, to overrate the importance of your mission, and it is a matter for congratulation that the age in which we live is far and away in advance in its recognition of the importance of hygiene as a public question than were the days in the earlier periods of our history.

Facts which were then ignored or scoffed at are now generally admitted, even if not fully realized and acted on; and the era of ignorance and unbelief, which was followed by that of speculation—times, no doubt, exceedingly trying to your predecessors intrusted with the ex-



ecution of sanitary improvement and maintenance of proper precautions—has passed away.

And yet much remains in the way of public enlightenment before you can be expected to accomplish the full measure of your calling, or receive that general and cordial co-operation, without which your hands are tied and your work hampered.

Public sanitation can only be accomplished by a public body representing the state; individual effort, however much directed by zeal, may be altogether without knowledge; and thus a single ignoramus may cultivate enough propagating germs of disease to infect a whole town or district, and so frustrate the good work of a representative board.

Therefore, it is upon a board of health, such as I see before me this evening, in a great measure depends the health of the people; but, at the same time, the best efforts you may make are doomed to failure, unless you receive those plenary powers which will enable you to carry out your plans.

And it is important to remember that while curative medicine is still but an art, which has progressed but little during the last fifty years, preventive medicine or sanitary knowledge has advanced to the dignity of a science, which may be destined within a few years to monopolize the attention of the medical profession, to the partial exclusion of the old-fashioned methods in which we have been reared.

The accession or increase to our knowledge as to the origin and growth of disease during the last ten years has been very great, and particularly is this the case respecting the recent researches into tuberculosis, thereby throwing upon us a greater degree of responsibility in using all means at our command to prevent and minimize the spread of this fell disease.

If we should sit still and permit the enemy to plant his guns right within our midst, it follows as a matter of course that we are beaten before the battle begins; and so if our citizens refuse to fall into the ranks, shoulder their muskets, and volunteer their aid under the orders of their superior officers, is it reasonable to hold the latter responsible for the killed and wounded? Certainly not. We may preach, and counsel, and exhort, and more than that, prove what we teach until we are tired; but unless we can obtain the zealous and intelligent co-operation of our fellow-citizens, we might as well talk to the moon.

A few weeks ago a wave of excitement swept over the land at the possibility of a rupture in our peaceful relations with Italy; and it looked at one time as if a recourse to arms of precision would be resorted to in default of an amicable arrangement; but, thanks to the skilful handling of the matter by our secretary of state and the return to common sense on the part of the statesmen of Italy, this calamity was averted.

Well, gentlemen, such an outcome to the dispute would have been a matter gravely to be deplored, but I doubt whether it would in the long run have proved more disastrous to us than is the constant and ever-

increasing flood into this country of the lowest, most degraded and often plague-stricken populations of the Latin, Hungarian and Slavonic races.

These people bring with them here and perpetuate the unsavory and insanitary habits of life under which they existed in their own lands with an utter disregard of those elementary principles of health which do obtain among the poorest classes of our own citizens; and thus when an outbreak of disease or epidemic occurs, these foreign settlements of Italians, Huns and Slavs, etc., form nuclei or hotbeds of infection from which points of vantage disease and death hold high carnival.

I do feel most strongly that it is the imperative duty of our representatives in congress to give these matters urgent attention, and take measures to protect the health of our people by excluding from these shores this deluge of undesirable people from other lands, who really add nothing to the prosperity of our country, but in the majority of instances return after many years to their homes, carrying back with them the money which they have made here, in consequence of the higher wages and prevailing happier economic conditions.

The elements of disorder which accompany this wholesale immigration are patent to everyone, and some startling illustrations have been afforded us in our own state within the last few months; but this phase of the question is not within our province, although we are fully within our domain in approaching the subject from the standpoint of public health.

There are many moments when we, who devote the best part of our lives to the endeavor to trace back to its source man's greatest foe—disease—to find out its hidden ways and to devise means for overcoming its hidden and stealthy marches upon its unsuspecting victims, must of necessity feel much discouragement at the scanty sympathy accorded to our work.

It would almost seem as if the energies of our statesmen were concentrated upon the health of the American hog and bullock. They are the subjects of much affectionate solicitude, and the resources of our great legations are exhausted in the endeavor to induce foreign governments to cast favorable eyes upon these much-maligned animals and permit them entrance into their countries.

If cholera breaks out among hogs immediate attention is given them by the local authorities, or if pleuro-pneumonia shows itself in cattle nothing is left undone to stamp it out; and in the same way, if our corn or potatoes are attacked by a parasite the whole science of the country is brought to bear upon the question.

In doing this our legislators and local authorities simply obey the mandates of the people whose servants they are, or ought to be. It is not that they undervalue human life, or set animal life above it, but simply that in the one case the results appeal directly to their pockets, while the other lies more in the region of feeling and sentiment.

During the cattle plague that devastated England some years ago thousands of valuable beasts either died from pleuro-pneumonia or were slaughtered to prevent the spread of the disease; and the loss in money amounted to millions of dollars; but if the same number of human beings had died from an epidemic, the loss in money would have not amounted to anything; and yet how immeasurably greater the one calamity than the other. The subject is a thorny one and almost impossible of correct presentment.

What, however, we of the medical profession feel, and feel strongly, is that there ought not to be anything in the shape of a "favored-nation clause" in regard to public effort and expenditure for the prevention of disease among animals as distinguished from that among the human race.

The neglect and supineness which exist among our authorities sometimes strike me as almost criminal. Take, for example, the question of the sewers in Philadelphia. I have no hesitation in saying that they are probably the worst in the world, at least in a city of her rank and importance. The day will assuredly come when, the conditions for it being favorable, some terrible outbreak will drive the lesson home in a way that now seems impossible.

But certain it is that not until our people in Pennsylvania realize that without health nothing is worth having, will the State Board of Health take that place to which it is entitled, and be regarded as the most important body in our state government. A minister of agriculture is a very useful and important personage, and the health of our flocks and herds is of vital moment to us, yet it cannot be compared with the supreme question of human health and, therefore, happiness.

When we who are willing to march daily into the camps of the tubercle bacillus—the more deadly anthrax bacillus, those of diphtheria and typhoid fever—come to be regarded as soldiers who risk their lives for those who are living in their comfortable offices and counting rooms, then, and not until then, can we expect that support which is justly due to those who will face leaden bullets and give their lives to benefit their fellow-creatures.

The discoveries which have been made within recent years encourage us to go forward in the endeavor to stamp out disease before it reaches a point beyond our grasp. "*Venienti occurrere morbo*"—Hasten to meet the coming disease—is the true watchword of our profession.

We know now that disease is either originated or, to say the least, much aggravated in most cases by a micro-organism which enters the body from without, thereby bringing more lives to a premature end than has ever been caused by the fiercest of wars and bloodiest of campaigns. With this knowledge before us we are encouraged and stimulated to take our lives in our hands in order to study and learn the life history of these our greatest foes and, therefore, it seems appropriate that we should



take the subject of tuberculosis this evening as one of the diseases which has proved so deadly and caused so much suffering, and speak of what we know concerning its origin, growth, etc., etc.

Yet, gentlemen, there is no subject that has been so thoroughly diagnosed during the last year as tuberculosis in regard to its causes and effects, its treatment and prevention, and I doubt whether it be possible to summon a set of professional men who are more conversant with this malady than those comprising the health board of Pennsylvania, whom I am now addressing; therefore, all I can hope to accomplish is to lay open this subject in all its varied aspects for your more thorough discussion from a sanitary point of view, for there is now abundant evidence of the preventability of this disease to a greater or less degree.

In speaking of this disease, I must confine myself to phthisis and those maladies accompanied by the tubercle bacillus. Whether the tubercle bacillus only becomes a specific irritant, or is *per se* the cause of tuberculosis, after making caseous degeneration of inflammatory products its habitat, we do not know; we must not, therefore, scoff at Klein, Gibbes *et al.*, who are endeavoring to show that the tubercle bacillus is not always to be found in the very early stages of this disease. Work in this direction brings about a healthy condition of original research. At present we possess but little knowledge regarding the life history of this microbe.

In our searches for this single-celled organism, as it is found in diseased animal tissue outside the animal body, we have only found it in such places and under such circumstances as justify us in believing that it has been secondarily deposited there either by the excretions of tuberculous animals or dead tuberculous tissue.

What its cycle of life is outside the animal economy we do not know, but we do know that on certain artificial culture mediums we can grow it to such an age that instead of its morphology being a straight rod, as usually described, it will be seen throwing out branches.

From the fact that we find these branches of such varying lengths, I am inclined to believe that it is not the result of a union established through coalescence, but to the displacement of the cells. This condition, however is not at all permanent, as a fresh culture medium will, from masses of these branched forms, grow the simple rod-shaped bacilli, yet after continuing the transplantation of the micro-organism in this more complex stage onto a fresh medium twenty-five times or more, its power to produce tuberculosis in the animal economy is much reduced; in fact, I have young dogs, guinea-pigs and rabbits resisting large inoculations of these growths, while the control animals inoculated with the second removal of bovine tubercle bacilli have developed general tuberculosis, or a form of disease which means death to the animal affected, and, at the same time, have present all those features which are

thoroughly characteristic of human tuberculosis in its histology, etc., etc.

This result, however, will make us halt at the threshold of the germ theory of disease, and prompt us to ask whether or not it is a toxic agent that is carried in with the bacillus, or whether the bacillus has been cultivated after living on caseous tissue to break down healthy cells into the caseous condition which may be essential for its own existence.

The very fact that we all breathe the so-called tubercle bacillus, and many resist its attack, shows, beyond doubt, that it holds, at least, an intermediate place between the lion and the maggot. The former overcomes and destroys the deer in full and perfect physical health, while the latter can only prey on lifeless matter. The tubercle bacillus may be saprophytic.

These speculations must stimulate us to carry the line of investigation still further, so that the results thus far obtained may be brought to bear in disproof or confirmation of one of these theories. If further investigation shows that the pabulum is the factor concerned in reducing its virulence, we must conclude that the tubercle bacillus at most only becomes pathogenic or disease-producing when cultivated on a particular pabulum.

Another interesting observation, that it has been my pleasure to watch, is that a mass of bacilli, far removed by artificial culture from the original tuberculous tissue whence it was taken, will not, when introduced subcutaneously into the animal economy, produce the immediate general toxic effect observed from the introduction of a mass only twice or thrice removed.

Again, my observations enable me to conclude that the power of the tubercle bacillus depends largely upon the health of the animal into whose system it is introduced.

If an animal is poorly fed the power of the bacillus is much more marked, as it is also in animals kept in small cages or exposed to bad ventilation, and, again, in those kept in filthy pens.

My animals, kept for experimental purposes in the country, under proper sanitary conditions, being well fed, in clean cages, placed in pure air, and permitted to enjoy the sun's rays for many hours of the day, when not too hot, have a much greater resisting power than those kept in my city laboratory.

These experiments are quite consistent with the known facts that, where there is the greatest exemption from the malady, viz., on the high mountains, in the deserts, in the Arctic and Antarctic regions, it is yet to be found under insanitary conditions.

These facts I will apply further on in my address.

While acknowledging, however, our ignorance regarding the life-history of the bacillus, as well as just how much power it has to produce tuberculosis when taken into the lungs or stomach of a perfectly healthy man, unless accompanied by much of the toxic substance so generally



found with it, we do certainly know, beyond all doubt, that by feeding carnivorous, herbivorous and omnivorous animals with caseous masses of bovine tubercle bacilli, we can produce deadly tuberculous conditions, let them be quite similar or not.

I have accomplished this by feeding raw bovine tuberculous lung to a puppy-dog six months old.

This being established with the dog, in which animal exists a great similarity between the mucous membrane and that of man, plus the fact that the digestive juices of the dog's stomach are the more acid of the two, we are forced to the conclusion that man can contract tuberculosis by eating raw bovine tuberculous meat.

To bring this still nearer to a condition likely to be met with in everyday civilized life, I roasted in an oven a piece of bovine tuberculous lung, weighing, I should suppose, about two pounds, until it was certainly better done than most of the roast beef eaten by our epicures. From the center of this piece of lung I opened a tubercle and grew from it bacilli. This should have been carried still further in a practical line by injecting a mass of it into the body of some one of the lower animals, so as to eliminate, as far as possible, the element of conjecture; yet, gentlemen, the experiments were quite sufficient to confirm me in the belief that, in all probability, a man can contract tuberculosis from eating the muscles of the cow, sheep, horse or fowl containing tuberculous lymphatics, let alone the more dangerous viscera, such as the liver, spleen, lung, kidneys, etc.

If the tubercle bacillus is a spore-forming fungus, as I am inclined to believe it is, we do not know just how much heat is necessary to render the spores sterile; this can only be determined when we learn to recognize them when present.

As long as my conclusions in this regard remain unimpeached, I must look upon tuberculous meat as a very dangerous article of food, at any rate for those who are at all disposed to a caseous breakdown of the tissues; and as that condition is often not manifested until the system has taken on tuberculosis, it behooves you, as our guardians of health, to forbid the rearing, selling or eating of such meat.

From our present knowledge on this point we must deem it prudent, nay, we must prohibit the consumption of any food containing microorganisms recognized as tubercle bacilli.

Cows suffering from tubercular mammitis will produce milk and cream containing those bacilli, and I expect yet to be able to find them in the milk of cows affected with pulmonary phthisis only; however, in well-marked tubercular mammitis I have never failed to prove the presence of bacilli in the milk.

If a test-tube of this milk is set aside for a few hours the microorganisms are found in greatest abundance in the sediment, while a few can generally be discovered in the cream. Some of the bacilli I observed so

closely resembled those found in human sputum that I would have diagnosed them as growing in that medium. Some were quite as large, while others presented that beaded appearance that has so often been spoken of by bacteriologists as characteristic of those grown in the human economy.

This, however, was not at all surprising to me, as I have never been able to believe that the very slight morphological distinctions made by Klein, Gibbs and others were of any significance so far as the power of the germ or its toxic agent was concerned in producing a very similar disturbance in the animal economy.

Not that the bovine bacillus, as found in the giant cell of bovine tuberculosis, does not average smaller and of a more even texture, but from the fact that many are quite the same size, and that on removal on a nidus rich with glycerine immediately grow bacilli equally as long and as beaded in appearance as those found in the sputum of man; and again, when passed once through the tissues of a guinea-pig they have produced the same morphological characteristics, therefore I cannot, from my own practical experience, differentiate as far as infection is concerned between the human and the bovine tubercle bacillus.

Certain it is that we can, by inoculating the dog with human tubercle bacillus and its *débris*, produce a wasting disease, accompanied by tubercles quite similar to those generally found in man.

Scientifically it will be of particular interest to have the bovine and human tubercle bacillus differentiated, yet at present, for all sanitary purposes, we will have to consider the tubercle bacillus of the cow, accompanied with its nidus, as being destructive to human life, for it is well established that the bacillus of man will produce in the lower animal economy, such as the cow, dog, guinea-pig, rabbit, opossum, etc., a deadly malady, and that the bacillus from the cow will also bring about a like disturbance in the same line of animals, and, further, bacilli from the rabbit, etc., will, in turn, reproduce tuberculosis in the cow.

From this intercommunicability we must believe the tuberculosis lymphatics interspersed in the muscles and the liver and the kidney, and other of the viscera that are subject to the growth of bacilli, such as found in the cow or fowl, are capable, when ingested into men, of producing a disease quite similar.

We must also look upon milk, cream, and consequently butter, as another channel through which like diseases, fatal to man, may be communicated.

It would seem well settled that matter containing either bovine, human or chicken tubercle bacilli when subcutaneously injected into a variety of animals, will produce a deadly disease that many of us are yet unable to differentiate from a tubercular malady.

Again, we have undeniable evidence that like matter will manifest the same power of harm when fed to such animals as respond to the inocu-

lation, yet, at the same time we must admit that there is no direct proof of the transmission of such a malady to man by his feeding upon what is now designated as tuberculosis meat or milk. And I fear it will be a long time before we can establish it by direct evidence, as man is exposed to this dire disease in a hundred and one ways during the long time elapsing between the period of infection and the manifestation of any symptoms.

Among the arguments against the probability of tubercular disease being communicated to man by the ingestion of tuberculous matter is the one that tuberculosis in man rarely manifests itself as a primary lesion in the intestine. This, however, is not all conclusive, for it is quite probable that the lymphatics, situate so near the frontier, where they are continually skirmishing with the enemy, become, to a limited degree, immune, consequently the invader will only gain the victory by making his way into a more remote portion of the territory where there is less resistance and there become established.

It may be taken into the lacteals, on into the chyle, and thence into the circulation, by which it can be carried to the most remote parts.

In children we often find tubercular lesions of the abdominal glands only, all other viscera being entirely free from any form of tuberculosis. I feel sure that time will soon reveal the fact that this is more often the case with adults than is generally believed.

However, from the fact that a tuberculous condition is transmissible through the digestive tract from man to many of the lower animals, and from one lower animal to another, backward and forward, we must, for the present, conclude that a tuberculous malady can be transmitted from tuberculous meat, milk and butter to man; also by dentists' instruments conveying sputum from one to another, by cooking and cooking utensils handled by those having tuberculous matter on their hands—for instance, bread or other dough-containing foods, pulled candies and the like.

In my individual search for tubercle bacilli I have found them in human sputum, in tissues of man, horses, cows, dogs, cats, rabbits, opossums, guinea-pigs, hogs, ostriches, fowl, street railway cars, dwelling houses and bacteriological laboratories, and in tooth brushes.

If the tubercle bacillus is to be found in street cars and dwellings we must believe it to be in the air of most inhabited places, and the more thickly populated and the more filthy the air the greater will be the proportion.

This being the case, it is for us to decide on general principles and facts whether or not we are to conclude, for our present purpose, the probability of tuberculous material infecting the animal economy when commingled with the inspired air with which our diseased mucous membrane and outside skin are being constantly bathed.



It seems to me we must suspect the abraded mucous membrane of the respiratory and oral tracts or injured skin when covered with eczema or other skin diseases, of being likely points of entrance.

By lacerating the gums and the lining of the oral cavity of the mouth of a guinea-pig—not more than the dentist often lacerates man's—and powdering the wounds with a mass of tuberculous material, I have caused to be produced a sub-maxillary disturbance microscopically resembling tuberculosis, while the microscopical examination revealed tubercle bacilli.

While most of the inoculations on guinea-pigs for experimentation are made by subcutaneous injections, I have also succeeded in producing infection by rubbing a mass of the bacilli on a superficially lacerated skin and sealing it over with rubber-cloth and sticking-plaster.

Other experimenters have irritated the respiratory tract with ground glass and then compelled the animal so treated to inhale particles of the tuberculous material, and thereby produced what they have described as tuberculosis.

We must, therefore, believe, for practical purposes, that the lower animals can be infected with a deadly disease closely related to tuberculosis either by the inspiration of tuberculous matter on the injured mucous membrane of the respiratory tract or through the injured skin when besmeared with tuberculous material.

These facts, coupled with those already alluded to, showing that human tuberculous material is capable of infecting the guinea-pig, rabbit, opossum, calf and other animals in almost, if not in precisely the same manner as the tuberculous material of a cow will affect the same kind of animals; and further, that tuberculous material from a guinea-pig will infect the other animals in exactly the same manner as when taken from man or cow, compel us to conclude that man suffering from inflammatory processes, or traumatic conditions of the mucous membrane or skin, may contract a deadly disease from germ particles in the air.

Just how long tubercle bacilli or their spores, if such exist, can retain vitality after isolation from a favorable nidus such as tissue or pus, we do not know, yet we have a good right, reasoning from the life of higher fungi on up through green vegetable life to that of fish and mammals, to conclude that the act of separation from the nidus does not *per se* cause immediate death of the cell, but that some time elapses before the germ dies in its non-life-sustaining surroundings.

If this be so, and the separation is constantly going on in man's immediate presence, why should the toxic agent not again implant itself on his abraded skin or mucous membrane while it still has vital power?

Even should we have to admit that the very act of separation of the disturbing germ from its original pabulum is presently fatal to its life, we must not forget what experiment has already demonstrated—that a

very slight current of air can carry with it not only the germ but also its nidus.

From the fact that in studying microscopic preparations of lung tissue we often find particles of coal that have worked themselves down into the very alveoli, we must, at least, suspect the possibility—in fact strong probability—of the tuberculous matter also working its way into the finer ramifications of the air passages.

The function of the respiratory apparatus is to convey air from without into the body. Its construction is such that, in full health, it screens out most of the light, short particles of deleterious matter, yet, when at all diseased it must, we believe, lose this power to a greater or less degree.

Dr. Arthur Ransome has shown that in bronchitis and catarrh, and other diseases in which there was much expectoration, the proportionate amount of organic matter exhaled from the lungs was only one half of that from the healthy person—not that there was less organic matter excreted, but because it was held by the mucous before it reached the mouth—and Professor Tyndall, as you must all remember, has demonstrated, by means of the illuminated tube, the filtering action of the respiratory organs.

Under such conditions as chronic bronchitis the ciliæ must, of necessity, lose their power to expel foreign material. The muscular walls become weakened, and dilatation and plugging, in all probability, take place, and the bacilli find a quiet *habitat* and a medium wherein to fructify.

Catarrhal pneumonia furnishes a goodly example of this condition predisposing to tuberculosis.

We cannot, however, make any estimate of the possibility of the harm arising from the entrance of such material into even the most remote and inactive portions of the healthy lung tissue.

This, however, is not necessary for you to consider as sanitary officers, inasmuch as there are few men with perfectly healthy respiratory organs who ought to look to you for protection against the invasion of this most fell disease. This, coupled with the fact that the healthy, if any, are constantly commingling with the unhealthy, makes it incumbent on you to render all places sufficiently harmless to both, particularly if you believe that tuberculosis in the air is hurtful to man in such health as the average human being enjoys.

It would appear from what has been said that it is probable that man, when in a certain condition, is susceptible to tuberculous infection when exposed to the *materies morbi*, and that it may make its entrance into the animal economy either through the stomach, the mucous membrane of the digestive or respiratory tracts, or through the abraded skin; and further, that man is constantly exposed to the toxic agent, and yet all men are not affected with tuberculosis.



I have little or no doubt but that all of you can remember instances when men have been severely exposed to tuberculous material and lived to a good old age untainted with the disease, while others who have been, in all probability, but slightly exposed have taken on the infection.

This special susceptibility demonstrates that some must furnish a suitable soil, and that, in such cases, the affinity of the constituents of the tissue must be weak, and thus enable the toxic agent to break it up and pass through the process of tuberculosis.

This condition, we must admit, is often hereditary. We have seen very many instances of members of the same family, living in different and far-distant localities, who have, at or near a certain age, succumbed to tuberculosis.

We cannot explain all the possible inherited factors, yet we can readily conceive mere abnormal and inconsistent proportions of the viscera as being a predisposing cause; a mere mechanical course pursued by the air passages, weak ciliæ in the air passages, digestive glands that secrete a weak gastric juice, papilli of the intestinal canal incompetent to make a proper selection of food, or a weak phagocytic power may each afford a cause for susceptibility.

There is certainly inherited not only a tendency to contract but a marked readiness to yield to an attack.

Hereditary predisposition is often intensified by intermarriage. If we find in the bovine foetus tubercle bacilli we have an heirship. The parent in this case certainly, to say the least, bequeaths to its offspring that which it actually possesses.

After an experience of breeding over a hundred animals, I am convinced, that interbreeding intensifies either strong or weak characteristics. However, this predisposition only furnishes a soil or habitat for that material so universally found in tuberculosis.

A predisposition in man can also be cultivated. Vitiating air is one potent cause; under this condition the blood is not properly oxidized, therefore the digestive function becomes impaired, the tissue weakens, and susceptibility is acquired.

Prebreathed air or house air with a lack of physical exercise is responsible for much tuberculosis acquired by man, not only directly, but also indirectly, by rendering the cattle he eats predisposed to tuberculosis.

Active ventilation in our dwellings and public buildings, factories, and mills, etc., is essential for the prevention of the disease.

We have no scientific proof that foul air in any way nourishes the tubercle bacillus or that it increases its virulence, yet we do know that it reduces the resisting power of the animal economy, and that a lack of a free interchange of air permits of an accumulation of the bacilli.

For instance, if 10,000 bacilli are given off into 1,000 cubic feet of air, there would be ten bacilli in each cubic foot of air breathed; whereas, if

the interchange of air furnished 10,000 cubic feet in the same length of time, each cubic foot of air inspired would only contain one bacillus.

Laboratory experimentation proves beyond doubt that the quantity of tuberculosis material taken into the animal economy decidedly affects the rate of mortality. This fact is entirely consistent with the well-authenticated statistics showing a much larger mortality in crowded places and goes to establish the absolute necessity of interspace ventilation to prevent the spread of tuberculosis.

This being the case, it goes without saying that the ventilation of the streets and air spaces of cities, towns, etc., is also necessary to maintain the health of inhabitants.

Statistics show that in proportion as people are attracted to indoor occupations and in proportion to the degree of closeness from want of proper ventilation of the buildings in which they work, in that rate is the ratio of deaths from tuberculosis increased.

Dr. Bowditch has shown us the extreme danger of dampness of the soil as a cause of tuberculosis, and has called our attention to the necessity of the more thorough drainage of the land. \* \* \* Dr. Bowditch's results have been confirmed by Dr. Haviland and by the registrar general of Scotland.

In the conclusions drawn from the map of distribution of tuberculosis in Great Britain, Dr. Haviland states: "Damp clayey soil, whether belonging to the wealdon, oolitic or cretaceous formation, is coincident with high mortality."

Gastro-intestinal disorders, that so generally precede tuberculosis, point to the necessity of proper and sufficient foodstuffs.

The disordered stomach may of course in a number of cases be secondary to tuberculosis, yet there cannot be a doubt as to its also being one of the predisposing causes.

As there is nothing that affects the wealth and happiness of the people of this great state more than ill-health, and as there is no one poison that interferes more with health than tuberculosis, which not only too often robs us of those in the prime of manhood and womanhood, but renders thousands upon thousands a burden to themselves and their families for years, yet it is happily a preventable disease, and this board should be armed with authority and means to enforce and carry out sanitary laws essential to that end.

To accomplish this most important work it must be evident, after what we have reviewed this evening, that you should have legislation regarding the disinfection and destruction of tuberculosis material, especially human tuberculosis sputum.

There should be a law compelling passenger transportation companies to furnish receptacles containing either water or a germicide for sputum, both in their cars and stations. The same law should apply to all places

where large numbers of persons gather together either for the purpose of work or amusement.

To enforce the expulsion of dust in our factories and workshops.

To compel the thorough sprinkling of the public highways immediately before cleansing.

To forbid spitting on the sidewalks.

To compel the drainage of damp soils before permits for building dwellings are granted.

Rules should be formulated for air space and ventilation of all buildings, and the builder and architects required to submit their plans and specifications before the work of building can be commenced. This certainly is quite as necessary and practicable as the present law in Philadelphia and other cities regarding plumbing.

Not only must we have a law requiring a certain air space and ventilation in our buildings, but also around our dwellings, workshops, etc.

The width of all new streets and passage ways should be of a sufficient breadth. Every block of buildings should have a complementary garden or park. Every building should be accompanied by a certain air space.

Such topographical regulations must be insisted upon in our growing cities, if we mean to reduce the present alarming death-rate and suffering from phthisis.

This ventilation of our cities and towns by the laying out of wide and diagonal streets and reservations of open spaces for gardens and parks, is essential for the successful ventilation of our buildings.

A pure and constantly renewed atmosphere is requisite for the prevention of consumption. This is well known and universally admitted beyond doubt or controversy.

All knives, forks, spoons, cups and other eating utensils should be thrown into scalding water immediately after using, otherwise the tuberculous sputum will be carried from one person to another.

Dentists and physicians should be required to disinfect their instruments according to a law of the state, and be subject to inspection and a heavy fine for a violation of the same.

The cleansing of all public conveyances should be regulated by law.

We should have laws regulating the ventilation of our animal stables. Cows, like men, require physical exercise and pure air and light to enable them to resist tuberculosis.

The hot, close, dark and dirty stables throughout our state are important factors in promoting tuberculosis in our cattle; therefore, regulations should be formulated for ventilation, light and cleanliness of animal sheds and stables. These should be under the inspection of competent and honorable inspectors.

Soiling of cattle should be forbidden by law.

As there are at present so many cows predisposed to tuberculosis, and as it is more than probable that interbreeding intensifies predisposition, it should be defined and forbidden.

All consumptive animals should be condemned and killed after having been valued and paid for by the state. The vending of the meat of such animals should be made criminal.

At present, cows suffering with this disease are constantly being sold in our markets for the manufacture of mince-meat and sausages.

The breeding of tuberculous animals, the killing of which, at any time, should be delayed for the want of a sufficient appropriation to pay for the same, should not be permitted.

The sale of the milk of such animals should be forbidden under a heavy penalty.

As tuberculosis, actinomycosis, lymphadenoma and rheumatism with enlargement of the joints would frequently be taken the one for the other by the laymen, competent government inspectors should be appointed to make periodical and special inspection of all home cattle as well as those about to be brought into the state.

All butter and milk imported into the state should be subject to inspection for tuberculous material. All meat exposed for sale in our markets ought to be subject to inspection and condemnation.

The law should require physicians to report tubercular cases.

The proved transmissibility of tuberculosis from one person to another brings us face to face with the necessity of considering the question of admitting to our country tuberculous immigrants.

Inoculation with tuberculous matter for the cure or prevention of tuberculosis cannot at this stage be recommended for general practice, as too few test cases of cure have yet been brought to an entirely satisfactory conclusion, while immunity in some of the lower animals has been sufficiently demonstrated in my own laboratory, since my first publication in the *Medical News* of 1889, to confirm me in my behalf that it can and is produced to a greater or less degree.

However, the risk of producing a diseased condition and the uncertainty of degree and duration of immunity are at present unknown quantities to me; therefore, I cannot now recommend that which my results on the lower animals gives me reason to believe I will at some future time be able to advise as a public measure.

By the agency of the tubercle bacillus, I believe we will have a means to prevent tuberculosis, and to diagnose and cure those who have fallen victims to the malady, yet at present I am of exactly the same opinion as I was two years ago, when I cured my first tuberculous animal, which animal happily still lives to speak for itself



## Should Tuberculosis be Made Returnable to the Board of Health?

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By LAWRENCE F. FLICK, M. D., of *Philadelphia*.

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The question whether tuberculosis ought to be made returnable to the board of health hinges upon the following propositions: (1) Whether the disease is contagious; (2) whether it is contagious in such a way that a knowledge of its whereabouts would be of any practical benefit in efforts at prevention; and (3) whether anything could be gained in scientific knowledge by the return of the disease.

The question of the contagiousness of tuberculosis has been so thoroughly discussed during the last few years, and the theory that the disease is contagious is now so generally accepted, that it is scarcely worth while to say much about it. I will, however, briefly sum up the evidence in support of the theory, and review some of the objections made to it. By far the most exact and convincing evidence in support of the theory is the series of experiments begun by Kortum in 1789, carried on by many of the brightest lights of the medical profession during the succeeding century, and so brilliantly brought to a climax by Koch in 1882. From the days of Hippocrates, every philosophical bedside observer had arrived at the conclusion that tuberculosis was contagious, but he could not demonstrate it to the satisfaction of others. By the aid of the new light which was thrown upon histology and pathology by the microscope, men began to see new ways of demonstrating what could not be demonstrated by clinical evidence. It was first observed that tuberculosis was a disease peculiar to itself, and always the same wherever it might occur. From this observation it was naturally deduced that the disease must always have one and the same cause, and that with the discovery of that cause it could be produced artificially. Accidental inoculations clearly enough pointed to where the cause should be looked for. Inoculations with broken-down tubercular tissue taken from man produced the same identical disease in animals, and this with such unerring certainty that, ordinarily speaking, there could be no doubt as to cause and effect. From a scientific point of view, however, this was not sufficient, and the inoculability of tuberculosis was not considered demonstrated until Koch isolated the disease germ which produces the disease, propagated it for many generations, and with germs removed from the original parent by millions of generations, produced identically the same disease. The experiments of Koch have now been performed, and his statements corroborated by so many able and conscientious men of various nationalities, that the deductions growing out of them, namely, that tuberculosis is inoculable, must be



accepted as absolute truth by all men who accept logic as the basis of truth. If a disease is inoculable, it is necessarily communicable, and if it is communicable it is necessarily contagious. There is no use quibbling over the meaning of words. Every disease is contagious which does not arise in the sick person of its own accord, but is produced from contact, direct or indirect, with some one who has the same disease. The inoculability of tuberculosis, whilst being admitted by the opponents of the theory of contagion, is explained away as a mere incidental phenomenon, and declared to be of no value because it is not borne out by clinical evidence. During the last few years, however, clinical evidence has been accumulating in sufficient amount to satisfactorily establish the theory of the contagiousness of the disease, even without the aid of experiments. In the first place we have reliable observations that houses which have been inhabited by tuberculous patients are infected and will convey the disease to others.

Cornet found that scrapings from the walls of rooms occupied by consumptives when introduced into the veins of animals produced tuberculosis. My topographical study of tuberculosis in the Fifth ward\* of the city of Philadelphia, showed that houses which had been occupied by consumptives became centers of infection; that deaths occurred in them from the disease right along for an indefinite period; that all the deaths from tuberculosis in the ward during a period of twenty-five years were confined to less than thirty per cent. of the houses of the ward; and that some houses, I may say many houses, had as high as six to eight deaths from the disease during that time. The same observations have since been made by others.

Cornet has shown that persons nursing consumptive patients die much more frequently from the disease than do people in other avocations. He found that among the nursing orders of Germany the mortality rate from tuberculosis was 62.89 per cent., whilst among the people at large it was only 23.78 per cent.†

An historical study of tuberculosis is in itself sufficient to prove its contagiousness. The disease did not exist in America and in many of the islands in the Atlantic and Pacific until it was introduced from other countries, and when it was introduced it became very prevalent. Countries which were colonized by Spain, where preventive measures were practiced at the time of colonization, remained free from the disease until it was introduced by other nations.\* The theory is, moreover, proved by successful efforts at prevention. Isolation in special hospitals has reduced the mortality from tuberculosis in England fifty per cent. during forty years.‡ Preventive measures practiced in the king-

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\* "Contagiousness of Phthisis," L. F. Flick.

† *Zeitschrift f. Hygiene*, Leipzig, 1889, Vol. VI, pp. 65-96.

‡ Special Hospitals for the Treatment of Tuberculosis, L. F. Flick.

dom of Naples during upward of a century have almost completely wiped out the disease.\* From a terrible pandemic which caused people to die in large numbers daily from the disease, tuberculosis has become so infrequent that, except in large cities and resorts for consumptives, the disease is now seldom seen. To sum up, we may then say that tuberculosis has been demonstrated to be contagious by experiment, by clinical observation, by history and by successful preventive measures. As to the argument against the theory of contagion, the most plausible one, and the one most frequently used, is that if tuberculosis were contagious every person ought to die of the disease, because we are all constantly exposed. This argument finds its main force in a general, and I might say almost universal, misapprehension of facts. The pernicious idea prevails that the entire world is swarming with tubercle bacilli, and that wherever we go we must inhale them. The facts are that the tubercle bacilli are confined to certain environments, and that they cannot maintain life very long outside of those environments, and that consequently we can only be exposed to them under certain definite circumstances. The human economy, moreover, has a great resisting power over all parasitic life, and therefore requires considerable exposure to disease in order to contract it. It is upon the ignorance of these two facts that all arguments against the theory of the contagiousness of tuberculosis are constructed.

Now, if tuberculosis is contagious, is it contagious in such a way that a knowledge of its whereabouts would be of use in efforts at its prevention? Tuberculosis has been shown to be contagious only through the tubercular pus given off as broken down tubercular tissue. The most careful experiments by a large number of careful observers have demonstrated this. The bacillus tuberculosis can only live as long it is supported by some foreign matter, from the time of its exit from one host until its entrance into another. It dies upon exposure to the air. Its natural environment outside of a host is pus. It will, however, live and flourish in any animal or vegetable matter. The contagium of the disease being thus confined, it would be a very easy matter to destroy it before it can gain entrance into a new host. To do this it is, however, absolutely necessary to know where it is. To be able to take any effective measures against tuberculosis, it is therefore first of all necessary that boards of health have an exact knowledge of the whereabouts of the disease. The only economical way in which this can be accomplished is to require physicians to report every case of tuberculosis as soon as discovered, and to report every change of location of such case. It is admitted by all that the board of health should know the whereabouts of small-pox, scarlet fever, diphtheria and other acute contagious diseases, and the same and greater reasons exist for knowledge of the

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\* "The Prevention of Tuberculosis," L. Outrey, Experience in Italy, etc., L. F. Flick.

whereabouts of tuberculosis. The slower and more insidious the infection of a disease, the more important for the board of health to know its whereabouts. Small-pox, scarlet fever, diphtheria and other acute contagious diseases spread so rapidly and are so easily communicable that it is difficult to stamp them out by the greatest amount of vigilance and preventive effort. Tuberculosis, on the other hand, could easily be stamped out, for the simple reason that it requires prolonged and intimate exposure to enable it to get a foothold in a new host. The extinction of small-pox and the other acute contagious diseases will, because of their nature, depend upon an enlightened removal of the requisite soil, such as by vaccination, by improvement in sanitation, etc.; but the extinction of tuberculosis can be brought about even without these, by a systematic destruction of the medium of contagion. In small-pox, scarlet fever and diphtheria, the medium of contagion cannot readily be destroyed, because of the difficulty of confining it, but in tuberculosis, where no such difficulty exists, its destruction is a very easy matter. It must further be borne in mind that tuberculosis, being necessarily a local disease, does not belong to that class of diseases which are or may be preventable by inoculation. No method will ever prevent it except that which destroys the disease germ and thus prevents its entrance into a new host. It is, therefore, of primary importance that boards of health should know the whereabouts of tuberculosis in order to be able to prevent it.

Finally, would the return of tuberculosis be of any benefit to science? A careful topographical study of the disease, which can only be made when every case is scrupulously returned, would soon clear up all the vexed questions about it; we could in this way probably settle the incubation period in human beings, determine with some exactness what part heredity and predisposition play in its etiology, find out approximately at least what influence soil, drainage, filth and want have upon its development, and what resisting power can be developed by acclimatization. If nothing else were gained than the light which would be thrown on these questions, it would be justifiable to place tuberculosis on the list of returnable diseases.

Now what are the objections to placing tuberculosis on the list of returnable diseases? One of the main objections is that physicians would decline to make such returns because they would consider it an unnecessary imposition of duty. Such an objection should not be considered by sanitarians. Physicians are, because of the privileges conferred upon them by the commonwealth, custodians of the public health, and are, by an implied contract, bound to do all in their power to protect the public health. The privilege of practicing medicine is necessarily a license, whether so defined by the commonwealth or not, and the conferring of that *de facto* a member of the board of health, and bound by all the mandates of that board. Physicians, therefore, could and should



be compelled to return all cases of tuberculosis if the board of health deems it to the interest of the public health to have such cases returned. Another objection is that it would create unnecessary alarm among the people to place tuberculosis among the contagious diseases. There is nothing in the contagion of tuberculosis to create alarm if that contagion is properly understood, but, on the contrary, a great deal of encouragement and consolation. It will greatly relieve many an anxious mind to be authoritatively informed that tuberculosis is not an inevitable disease to every man or woman whose father, mother, sister or brother died of it. The fact of its being contagious will not frighten them when they know that a little precaution will readily prevent contraction of the disease. The people, moreover, are bound to get the information about the contagiousness of the disease anyway, and it is much better that they get it from our boards of health than from other sources. Still another objection which is somewhat effectively urged is that it would inflict injury and hardships upon property owners. The return of tuberculous houses to the board of health need not inflict an injury upon the owner of that house, but on the contrary may be made a benefit to him. The idea that a house once infected by tuberculosis is apt to convey the disease to others is bound to spread among the people sooner or later, and when it has so spread, infected houses will be avoided. To report such a house to the board of health, to have it properly disinfected, and to have it recorded in the office of the board of health as properly cleansed, or to have a bill of health issued to the owner for it, will relieve the public mind of all anxiety, and will remove all impediment to the renting of the house.

The placing of tuberculosis on the list of contagious diseases is certainly the first step that must be taken by our boards of health if they desire to make an effort to prevent it. Are they ready to take that step? If they are consistent and follow their convictions they must take it. A number of boards have issued circulars, calling public attention to the fact that tuberculosis is contagious. They are, therefore, committed to the theory. Now, if tuberculosis is contagious it is preventable; if it is preventable the government is bound to take steps to prevent it; and the boards of health, which are the representatives of the government, ought to be consistent with their convictions and take this first step toward prevention.



### The Ostrich and the Camel ; or, How Some People Treat Epidemics.

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By CHARLES McINTIRE, A. M., M. D.,

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Secretary of the American Academy of Medicine, etc.*

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It is said that the ostrich, when pursued and in danger, hides its head in the sand, thus causing the danger to disappear from its view. And they have a story in the Orient of a poor peasant who was lying in his hut one night as comfortably as he was able, when, through the opening that answered the purpose of door and window and chimney, his camel thrust his head to protect it from the cold driving storm without. As the camel's head in no way interfered with the comfort of the peasant, and as it was before the days when physiology was a compulsory study in the schools of that land, he knew nothing, probably cared less, about the camel consuming a part of the oxygen of his atmosphere. Since his comfort was not disturbed, he left the camel to his own device. You all know the sequel—following the head came the shoulders, the trunk, the entire animal ; and now, there being no longer room for the two, the heels of the camel are brought into play, and the indifferent peasant spends the rest of the night in the cold.

It is not necessary to inquire into the historical accuracy of either of these statements for our present purpose ; the recollection of them was forced upon me while making an investigation for the board during the past year. It was in one of the prettiest boroughs in the state, a community whose beginnings are associated with Indian treaties and pioneer settlements. Poet and painter have chosen scenes from her history as subjects for their pen or pencil. Her inhabitants, known, and justly, for their intelligence, their piety and their worth, have, by their thrift and business tact, added wealth and prosperity to their other blessings. In such a town as this there was found the antitype of the ostrich, and amidst such surroundings there was repeated the history of the peasant and his camel in a modern and accidental form.

The town is situated on a limestone hill. A river flowing to the south of it forms a valley on that side, and a creek to the west flows through a valley almost at right angles to the former. To the north and east the surface is continuous with the upland or table land, and is a rich farming country devoid of streams. At the foot of the hill to the west of the town, in the valley through which the creek runs, is a fine, large spring of limestone water, which has been carefully covered over, connected with pumping works, and supplies the town with water ; the water being hard causes most of the houses to have cisterns, some of them relying alone upon these for their water. All over the hill above, deep pits have been sunk down to the rock, down through the rock, each to receive the domestic sewage of the house with which it is con-

nected. There are no sewers except those which convey the excess of surface water from the streets.

Just before the wave of influenza swept over the land in 1889, there was an unusual amount of sickness in this borough ; could some of the cases have been typical of all the cases, there would have been no doubt expressed by the physicians as to the nature of the disease, they would have pronounced it, without a doubt, typhoid fever. On the other hand, had some of the rest of the cases fairly expressed the symptoms of all the cases, they would have been equally certain that it was not typhoid fever. And as these cases seemed to gradate into each other by almost imperceptible stages, there was a discussion as to the nature of the disease, but la grippe came on apace, and everything was forgotten in the necessity of the hour. The following summer witnessed a return of the disease, with still a difference of opinion as to its nature. One thing was certain, there were many sick, and the physicians were driven at a time of the year when they are apt to find rest. Another fact easy to discover, there were a number of deaths.

This is not the place to discuss the nature of the sickness ; suffice it to say that in the progress of the investigation, every physician in active practice in the community was visited, and, with but a single exception, they all testified that they had cases of genuine, simon-pure typhoid fever during the period under observation. They all, without exception, reported the prevalence of a febrile disease other than typhoid during the same time ; and while they differed greatly in their estimate of the relation of the frequency of the apparently two forms of fever, they agreed, in their estimate, that the undoubted typhoid was the less frequent. Each physician was asked to indicate his cases of undoubted typhoid fever on a map of the borough. In this way 490 cases with 32 deaths were tabulated ; 136 of these cases belonged to adjacent corporations. If to this we add the greater number of cases of remittent, or bilious, or malarial, or break-bone fever as it was variously called, we can safely conclude that it would have been impossible for any intelligent person not to have learned upon very superficial inquiry of the prevalence of a greater amount of sickness than usual. There was quite a marked public sentiment that the least said about it the better. One business man said to the inspector of the state board, in speaking about a member of the local board of health, who was anxious for a thorough investigation, that "he was an alarmist ; the disease had been greatly exaggerated, both as to type and prevalence ; it should not have been noticed at all." Said another : "There is no more sickness here than with you." The reverse of this was demonstrated by the inspection. Everywhere the ostrich-like action on the part of the people was evident.

When the town was built and the inhabitants depended upon wells, or more probably cisterns, for their water supply, there was plenty of

room in the limestone rock to deposit the sewage; the putting in of the camel's nose excited no remark, caused no alarm. The town grew, and there must be water on tap; what better source could be obtained than this beautiful spring at the foot of the hill? To be sure, the camel was still thrusting himself farther in the hut, but, familiar with his presence, he caused no remark. Time rolls on, cesspool after cesspool is sunk into the rock—some of them within a hundred yards of the spring, and sunk to a deeper level than the bottom of the spring. Year after year the filth is soaking into the rock itself, or forcing its way through cracks in the rock; the water system has been extended, a costly pumping station erected, and everything in sight kept in apple-pie order. The camel is now well in the hut; there is not room enough in that rock for the pure water and the sewage, and the camel has used his heels in a restive sort of a way. It may not be too late to lead him out; if it is not, it will cause a struggle, and it is more than probable that he will now come off victorious, and he shall be left alone in possession of the hill.

Suppose these good people had not, unconsciously, followed so unfortunate an example, what, probably, would have been their line of action? It must be acknowledged that they did a great deal of cleaning up, so that some good was accomplished; but what in addition to this should have been done? In the first place, they ought to have enforced the ordinance requiring that every case of the disease be reported, and insist upon a burial permit being issued for every death. This would have given them the accurate facts; it would have opened their eyes on the one hand to the greater prevalence of the disease than many of them suspected, and would have enabled them to have authoritatively contradicted the exaggerated rumors that spread through the country round. The water was, naturally, looked upon with suspicion; one set of analyses was made with rather indefinite results; they should not have rested upon a verdict of "not proved," but have had a series of examinations made until the water was fully acquitted or the extent of the contamination fully made out. Another examination was made some two months later, but these two have not given the desired information; they should have been continued until the character of the water was fully understood. Then with careful and deliberate discussion, it should have been determined whether it was possible to oust the camel. If so, whether it was desirable, and if desirable, how should it be done? If the amount of sewage in the rock would prove a source of contamination for a long time to come, then a new source for a water supply should have come up for discussion and settlement. If it could be prevented from doing harm to the water, then would it be less expensive to arrange for the purification of the water and another method of sewage disposal, or to arrange for a new water supply. In this way, calmly acknowledging the danger, probing it to know the full extent, and deliberately planning to overcome it, they would have been able to have done with deliberation and care



that which, some day, when the camel indulges again in a display of his heels, they will endeavor to do in haste and panic, with the accompanying risks of such hastily devised action. Should any of you ever be placed in similar circumstances, I exhort you, even at the risk of being accused of borrowing the thought from a somewhat famed soap advertisement: Don't be an ostrich; and it may be well also to add: Don't trifle with a camel.

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**The Difficulties Encountered by a State Officer in Enforcing Quarantine in Rural Districts.**

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By SPENCER M. FREE, M. D., *Medical Inspector of the Pennsylvania State Board of Health for the Western Slope District.*

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The subject of my paper should properly be "Some of the Difficulties Encountered by a State Officer in Enforcing Quarantine in Rural Districts," inasmuch as the time at my disposal is not sufficient to allow of an examination of *all* of the difficulties encountered. I shall, therefore, name some which I have found to be of especial importance, as I have endeavored to do the work of a sanitary officer of the State Board of Health.

I name, as one of the chiefest difficulties, *ignorance*—ignorance on the part of the physician, of the people and of the authorities. Ignorance on the part of the physician embraces, so far as my present subject is concerned, in the first place, inability to diagnose the disease correctly; in the second place, failure to recognize the disease as a dangerous one to the community, though correctly diagnosed; and, in the third place, ignorance of the proper sanitary measures to be used to stamp out the disease, or a culpable carelessness in not instituting such measures, which supposes an amount of depravity in the physician which one cannot believe possible in this age of advanced civilization.

My subject being limited to rural districts, my remarks will, of course, be understood as referring to physicians practicing medicine in the country; but lest they should be thought to mean that country doctors are the only ignorant ones, I wish to say that I have seen and heard as great ignorance among city doctors, and it is the more humiliating, inasmuch as the opportunity for information are so much greater and so much more convenient in the city than in the country.

The ignorance of the physician is manifested, as before stated, in his inability to correctly diagnose the disease. This is pardonable when it is an obscure malady, which, as a rule, is not contagious or infectious,



and does not require quarantine regulations, or when it is one of those few epidemic diseases which are so seldom met with as to be difficult of diagnosis. But when physicians mistake typhoid fever for intermittent, and treat it for several weeks as such, which I have known to be done in two large inland towns of this commonwealth the past year, by men of excellent standing who should know better, it is unpardonable ignorance, or gross carelessness, which is worse still.

In the cases above referred to, the errors were fraught with very unfortunate results, which would have been prevented had the disease been recognized and properly managed from a sanitary standpoint. It is no uncommon thing for sanitary officers—and they are not, as a rule, men who lay claim to any special superiority in the matter of medical knowledge and skill—it is no uncommon thing, I say, for them to find mistakes in diagnosis in such diseases as scarlet fever, typhoid fever, diphtheria and measles.

This ignorance is also manifested in the failure to use the proper sanitary precautions when recognizing the true nature of the disease.

Some few physicians refuse to believe certain diseases to be contagious or infectious, notwithstanding the great amount of proof open to their inspection, and therefore employ no means to prevent the extension of these diseases, and oppose all such means if employed by a sanitary officer. Many physicians, recognizing the diseases correctly, fail to use sanitary precautions purely through ignorance of the wonderful powers within their reach. Though it may be true, as sometimes charged, that some members of this most noble profession are so base and mercenary as to encourage and rejoice in the sickness of their fellow men that they may profit thereby, I will not, I cannot, believe it true of many. For in this beautiful and busy world of ours, where work is so abundant and callings are so numerous, there is no calling so pure in its intentions, so deep and entwining in its hold on the heart of humanity, so noble in its achievements, so far-reaching in its possibilities, as that of the Christian physician. For my profession, I yield the palm to no philanthropist, lawyer or doctor of divinity; hence, I do not believe that such ignoble wretches as those referred to can often enter or long remain within the fold.

To illustrate how a good physician was indirectly the cause of an epidemic, let me say that to a small town in the central part of this state there came a man ill with typhoid fever. The attending physicians gave no directions of a sanitary nature, except that the discharges of the patient should be buried. Nothing was said about disinfecting them beforehand, and no germicide was provided for the purpose. The season being wet, the typhoid bacilli, or germs, or whatever you please to call them, were carried through the soil until they reached the vein of water supplying a spring which furnished water for a portion of the inhabitants. The result was, that from this one case, by way of the spring, came twenty-

five cases, of which three died, one of them being a prominent and valuable citizen of the town, and another being an equally valuable citizen of an adjoining town. Nothing is a more certain fact in sanitary science than this, that had the discharges of the first case been thoroughly disinfected before being buried, the spring would not have been infected, and no other case would have resulted. The memorable Plymouth epidemic of over eleven hundred cases, with its one hundred and four deaths from this same disease, occurred because the discharges of one case were not disinfected before being thrown on the ground, whence they were washed into the stream supplying a reservoir which furnished water to a portion of the town. Let me repeat that nothing is more certain than that epidemic diseases can be confined within certain small limits, and in many instances can be entirely prevented by the institution and maintenance of proper sanitary measures.

The ignorance of the people forms no small part of this first-named difficulty. There is not much time devoted to the study of sanitary science by country people. Very few of them take a journal on the subject. The daily and weekly papers contain but little information on this topic. It is sparingly and badly taught in the schools, and very rarely by lecture. The epidemic diseases are recognized as such, and also as being dangerous, but the people do not seem to know that they can control and prevent them. Very few persons in an ordinary country community know what are the best disinfectants and how to use them. I was once called to a town of 2,000 inhabitants to explain how to use some disinfectants which had been sent there by the State Board of Health after an inspection by two of the members of the board. The town is an average town in intelligence, in business and in every way, and is the place of publication of three weekly papers.

Then, too, the interest in the subject of sanitation is not great. When the learned law-making body of this great Commonwealth of Pennsylvania, the intelligent legislature, is *so much* interested in sanitation that it appropriates the appalling sum of \$5,000 annually to the State Board of Health, while at the same time it gives \$15,000 for the propagation of fish which cannot live in its filthy waters, and \$500,000 for the maintenance of the state militia, it is not surprising that people in the rural districts have wakes over diphtheritic corpses, and church funerals after scarlet fever deaths; that they hold railroad companies responsible for killing drunken men, and regard an extensive epidemic as a dispensation of Divine providence.

The township and borough officers are elected from among the people, but not on account of their special knowledge of hygiene. They, therefore, generally know no more of the matter than do other people, and do not try to find out, not recognizing this as one of the responsibilities of their official relation. Judging from all circumstances, and from their readiness to call upon the State Board of Health in every emer-

gency, I should say that they are ignorant of the rights and privileges that they have under the present state laws. One seldom finds a borough with a well-organized board of health, not often that one has even good sanitary regulations, and there is not a single township in the state that has a health organization. These officers concern themselves about roads, fences, sidewalks, schools, violations of civil law, etc., but do not consider the more important matters of public health. They build school houses that are not properly heated, ventilated, lighted or furnished, which produce physical deformity instead of proper development. Injury to body and to bodily health is positively assured whether any intellectual development accompanies it or not. They enact and maintain laws and have officers to protect property, to preserve peace, to hang murderers, but they do not provide against adulterated foods and drinks, and the entrance of epidemic diseases which kill their victims as effectually and in greater numbers than do assassins. When, therefore, the sanitary officer comes along with his quarantine station, his quarantine regulations, his disinfectants, his stopping of public funerals, his closing of public schools, his prevention of public assemblages, his rules concerning foods and drinks, personal cleanliness, visiting from house to house, nursing, etc., the people look upon him as a despot. They think that the board of health is there to afflict and not help. It develops much opposition, sometimes even resistance, which requires time, talk and no little force to overcome.

When the people have called on the state board for help, and the sanitary officer arrives, though they may be willing to do anything asked—and I am glad to say that in the great majority of cases this is true—all the methods, ways of doing things etc., must be explained, and quite a little time is spent before the regulations can be properly established and carried out.

The next important difficulty is the want of money. As before mentioned, very few boroughs and townships have any sanitary regulations, and hence have no money for such purposes. When an epidemic breaks out and state aid is called for, the question of money for sanitary purposes at once presents itself. A quarantine station may be needed, a building must be erected or bought, or tents must be procured. Provisions must be furnished the inmates. Physicians and nurses must be supplied. Guards must be paid. There may be funeral expenses of no small amount. It may be that free vaccinations must be ordered. Where are we to obtain the money? Owing to the *liberality* of our legislature, but \$5,000 a year are allowed the State Board of Health for all purposes. Hence, no money can be furnished to the afflicted community by this body. A fund must, therefore, be obtained from the citizens and corporations of the place and of the surrounding towns. This puts the matter on an insecure foundation, and the superstructure is in constant danger of collapse. A meeting of citizens must



be called, committees appointed to wait upon the people and the corporations. This consumes valuable time, during which only a voluntary quarantine, or none at all, can be maintained. The amount collected is always insufficient for the demands upon it, and a second or a third collection is necessary. The officers are constantly hampered because of this, and are unable to do such prompt and effective work as they desire and ought to do. If the difficulty of money supply were removed, the sanitary officer could make a much better showing in his management of epidemic diseases.

I have occupied so much time in the discussion of these major difficulties that but little is left for an examination of minor ones, nor would most of these latter be hard to surmount were the former ones not present. These embrace such things as the *location* of the quarantine station, which is not always an easy matter to decide upon, and sometimes presents itself as an important difficulty.

The *buildings* for the quarantine station, the kind, style, size, number, material, must all be considered, as well as the time and the money to be consumed in their construction. This makes a difficulty at times of no small moment.

The question of *disinfectants* must be noted as among the difficulties. None are on hand, as a rule, and they must be obtained from a distance. The best ones to use, and the best ways to use them, are not always easy questions to decide.

The *obtaining* of doctors, nurses, cooks, servants, etc., while not a serious matter in some cases, proves to be a very great difficulty when the disease to be quarantined is diphtheria, small-pox, or other of the more dangerous epidemic diseases. I have known it to be impossible to obtain, in cities of large size, physicians and nurses for a small-pox quarantine station in the country.

It is no easy matter to obtain perfectly reliable *guardsmen*, and as so very much depends on the faithfulness of these officers they must be persons of unflinching integrity. Failure at this point means failure complete. On one occasion I had a very important quarantine to maintain, and selected the guardsmen with great care. Men of supposed perfect reliability were obtained, and after a month of faithful duty, one of them was discovered in collusion with an inmate in a plan to effect the latter's escape.

There should be mentioned, before ending this list of difficulties to be encountered, *opposition* on the part of the patient and his friends to his removal to the quarantine station. This can generally be overcome by a thorough explanation of the subject of quarantine; but at times the opposition is obstinate, and open resistance is met with, making the difficulty a very unpleasant and disagreeable one to surmount.

I have mentioned only some of the difficulties which seem to me to be the more important ones.



We are told that it is easier to point out difficulties than to offer plans for overcoming them, but this latter is not included in my subject.

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### Water Supply in Mountain Towns, With Special Reference to Altoona Water Supply.

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By CHAS. B. DUDLEY, PH. D., *Chemist Pennsylvania Railroad Co., Altoona, Pa.*

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The water supply of mountain towns presents some problems of rather peculiar interest. The question of quantity is, of course, the first and most prominent one, and, situated as mountain towns are, near the sources of streams, the question of quantity assumes an importance that is not at all felt in places farther away from head-waters. Where a stream flowing constantly one hundred or one thousand times more water than the daily needs of the people passes a city or town, the main question to be considered are those of quality, and means of getting the water distributed for daily use; but in mountain towns this is obviously not the case. Mountain streams are, of course, necessarily small, unless some peculiar configuration of the country should contribute to make them large; and, furthermore, the fall is usually very rapid, so that the rain soon runs away. These sources of supply also are affected by floods and drouth very much more than the supply of towns situated farther away from the mountain ranges. In addition to these difficulties it seems to be true, especially in Pennsylvania, that towns situated near the mountains have special difficulties in regard to the purity of water supply. It is the object of this paper to discuss a few of these difficulties which are characteristic of the water supply of mountain towns, and especially to refer to the characteristics of the Altoona water supply.

Of course every town has its own local conditions, and it is entirely possible that much that applies to Altoona might not apply to any other single town. We shall, however, perhaps best bring out the points which we have in mind by confining our discussion largely to the state of affairs at Altoona, allowing other towns situated near head-waters to apply as much or as little as suits their own circumstances. First, therefore, in regard to supply.

The amount of water required per person per day, is, of course, variable, and there is no positive figure applicable to all situations. In what follows we have assumed sixty-five gallons per day per person required. Based on this figure, the present consumption of Altoona is a little over 2,250,000 gallons per day, the population being 35,000. Allowing for natural growth of the population, in ten or fifteen years Altoona will

require 3,250,000 gallons per day. Where, then, shall this water come from?

It is a very easy matter to furnish water enough during certain portions of the year. The average rainfall at Altoona, for the past five or six years, has been about thirty-two inches, and this is fairly well distributed throughout the year, so, that if it were not for the evaporation and occasional dry periods or drouths, it seems fairly probable that the flow of streams in average years might furnish sufficient supply. Unfortunately, however, three or four months in the year are frequently dry, the rainfall being diminished in amount, and the evaporation very great. When this happens the flow of streams becomes entirely inadequate. Careful measurements of the four most available sources of water supply, which could be used without pumping, show that in 1887, when a drouth of some two or three months' continuance visited this region, the total flow of these streams was as follows:

|                             |                          |
|-----------------------------|--------------------------|
| Homer's Gap, . . . . .      | 238,000 gallons per day. |
| Blair Creek, . . . . .      | 900,000 " "              |
| Mill Run, . . . . .         | 490,000 " "              |
| Kittanning Point, . . . . . | 498,000 " "              |

This gives a total of 2,126,000 gallons per day. As stated above, the present needs of the city are a little over 2,250,000 gallons per day, and within ten years 3,250,000 gallons will be required. If these figures are to be trusted, and if we must, as seems reasonable, provide for the worst conditions, it is entirely obvious that even though all the possible sources of supply, without pumping, are made use of at Altoona, it is absurd to expect the flow of streams to furnish the amount of water necessary for the city supply during a dry time.

This point being established, it seems clear that some other means than simply the flow of streams by gravity will have to be made use of to supply towns situated as Altoona is with water during dry weather. Two other propositions have been made to meet this difficulty. One is to pump from other available sources of supply, taking the water lower down the streams where they are larger, and the other is to attempt to get a supply from artesian wells. In a paper so brief as this one must necessarily be, it will be impossible to discuss all the points in full, and so it will perhaps be wise to say only that the pumping scheme, while undoubtedly available to help out the other sources of supply, means a large amount of money. So far as we can get reliable information, it seems fairly safe to say that to attempt to supply Altoona with water from running streams would involve the construction of water works at four different places, using gravity for distribution, and a pumping-station at one or two others, so that the total cost of such a scheme would probably be not less than \$1,000,000 or \$1,250,000

The artesian well scheme has excited considerable interest, and one well has already been put down in Altoona to a depth of over 2,000 feet.

This well has water in it, but it does not flow. During one dry spell, 25,000 gallons per day were taken from this source of supply by pumping. A careful study of the geology of the region indicates the possibility of a small supply by means of artesian wells, but the uncertainties are so great that it would be a bold man who would be willing to guarantee a sufficient amount of water from artesian wells.

In view of this state of affairs, it is obvious that the only possibility for a mountain town like Altoona is to store water during the rainy season to tide over the dry weather. This method has already been made use of to a limited extent. There are now in existence, near Altoona, three storage reservoirs—one on the city supply, located at Kittanning Point, southwest of the city, about five or six miles from Altoona, which holds about 60,000,000 gallons, or practically about twenty or thirty days' supply, including the flow of streams during dry weather. The other two reservoirs are on the Pennsylvania railroad supply, and are located in what is known as the "Kettle," east of the city, one containing about 30,000 gallons, known as Pottsgrove reservoir, and the other containing 180,000,000 gallons, known as Brush Mountain reservoir. Both of these are on the same stream, the larger being situated higher up the stream.

The drainage area for securing water supply on several of the possible sources is abundantly large. This drainage area has not been accurately mapped out for all the sources of supply, but so far as information has been obtained, it shows that the drainage area supplying any one of three or four possible sources is sufficient, so that there would be no difficulty in getting two or three times the amount of stored water that is necessary to tide Altoona over a very dry season. It has been proposed to build an additional storage reservoir on the same stream from which the present city supply is obtained, some mile or two toward the city from Kittanning Point reservoir; and for this source of supply the drainage area has been pretty carefully studied. The proposed reservoir will hold about 360,000,000 gallons, and this, with the average flow of the stream, will afford about a six months' supply for 50,000 people. The actual available drainage area on this proposed reservoir varies somewhat with its location, but it is somewhere from seven and three-quarters to twelve square miles. This, according to data obtained by Mr. C. W. Knight, of Rome, New York, a hydraulic engineer, who has devoted considerable study to the question of the Altoona water supply, compares very favorably with the drainage area in other regions, which have already been shown to furnish abundant supply for storage. For comparison it is perhaps advantageous to have two or three figures. The New York Bronx river supply stores 215,000,000 gallons per square mile of water shed. At Scranton, a storage is obtained of 300,000,000 gallons per square mile of water shed. The proposed reservoir at Altoona only demands 45,000,000 gallons per square mile of water shed.



So far as supply goes, therefore, there seems to be no difficulty in obtaining abundant water, provided proper storage means are made use of; and although it is impossible for us to state this same fact for any other town than Altoona, it would seem as if towns situated not too close to the crest of the mountain might without difficulty secure sufficient drainage area to give them all the water needed.

Thus far we have discussed only supply, and the main points which we have tried to bring forward are: First, that for any sizable town near the summit of a mountain range, which means near the sources of the streams, storage is absolutely essential, in order to tide over dry weather, unless, perchance, an unlimited amount of money is available, and pumping is made use of, or the very remote possibility that artesian wells will furnish what is needed; and, second, that unless the town is nearer to the sources of the streams than Altoona is, say four or five miles, it is probable that there will be drainage area sufficient to furnish all the water needed.

The question of the quality of the water now comes forward with a good deal of prominence. It is well known that water stored in reservoirs many times has certain peculiarities, which render it objectionable to use, and there is also the additional difficulty, especially in Pennsylvania, that many of the small streams which are available for water supply to mountain towns are contaminated seriously with mine drainage. This latter difficulty is certainly the case with the Altoona water supply at present, and the former difficulty, in a marked degree, is characteristic of the two reservoirs of the Pennsylvania Railroad Company at Altoona, namely, the Pottsgrove and Brush Mountain reservoirs. In view of these facts, the question of storing water for mountain towns seems to be clothed with considerable difficulty.

Let us see whether we can get at the facts of the case, and then, if possible, draw some conclusions from them. The Altoona city water supply from Kittanning Point reservoir is very fair water for nine months of the year, and for two years past, owing to the heavy rainfall, there has only been a week or two during the year when the water was not quite usable. This is true, notwithstanding the fact that the drainage from four or five quite extensive coal mines finds its way into the water, and that the length of time from the admission of the drainage to the water supply until the water reaches the reservoir is so short, and the rocks and strata that the water flows over are of such a nature, that much of the unchanged mine drainage finds its way into the storage reservoir, and from there to the city service. Usually the mine drainage is so small a proportion of the supply that there is little difficulty. This is not true, however, in dry weather, when the proportion of mine drainage becomes larger. At these times the tea and coffee made from water from this source have an inky taste. It is well known that mine drain-



age is largely protosulphate of iron, and this combines with the tannic acid of the tea and coffee, forming, as is well known, a species of ink, which clearly accounts for the taste above-mentioned.

On the other hand, the water from the Pottsgrove and Brush Mountain reservoirs, east of the city, is a fairly usable water for eight or nine months of the year, although containing quite considerable amounts of organic matter dissolved in the water. The presence of this organic matter is variously accounted for, some claiming that when the reservoirs were built the bottoms were not quite sufficiently dredged or cleaned. Others state, what is certainly true, that higher up on the stream there is quite an area of swamp, and that this constantly furnishes something to the water. Whatever the source, the fact remains that the water in these two mountain reservoirs has considerable dissolved organic matter in it. However, this would not be, so far as our knowledge goes, so serious an objection, as almost all natural waters have more or less organic matter in them from either animal or vegetable sources, or from both; but, beginning usually about the last of May or first of June, the water from these two reservoirs becomes almost unusable for drinking, due to the presence in the water of some algæ or water-plants. Some study has been given these plants, but they have not been fully identified. The most prominent one is, apparently, of the genus *Spirogyra*. It grows in great luxuriance around the edges of Pottsgrove reservoir, and, either as the result of its own life history, or possibly as the result of some animal life making its home in the plants, imparts to the water a very disagreeable taste and odor. The odor is very characteristic, but is difficult to describe. Perhaps the best that can be said is that the water has the odor and taste of corn-silk. It is claimed that this water produces diarrhœa, when used in the ordinary way. Considerable study has been put on a method of overcoming this difficulty, but nothing has yet been found which would anything more than mitigate the trouble. The most successful thing tried was to remove the plant in large masses, by running a pole in it, and twisting it around until a considerable accumulation had been obtained, and then drawing it upon the shore and allowing it to dry. The peculiar odor and taste are very persistent, and follow the water even when it is distilled. Nothing has yet been secured which would make this water palatable while the plant is thriving. The trouble affects the reservoir for three or four months.

This difficulty with the odor and taste of stored water is not confined, as is well known, to mountain towns. The peculiar difficulty which we have here we have never met elsewhere, but it is well known that the storage reservoirs of Boston, of New Haven and of other cities are frequently affected by some peculiar odor and taste, usually due to some microscopic plant or algæ. The new reservoir recently built at Greensburg, in this state, on a not very large stream, had

during last summer quite a serious difficulty due to taste and odor, which taste and odor disappeared when the water furnished the service was taken from near the surface instead of from near the bottom. Study has not succeeded in locating this difficulty on a plant or algæ. The reservoir being new it was believed that the odor and taste came from the stagnant water lying near the bottom of the reservoir in contact with the soil.

In view of the difficulties mentioned above the problem of securing good water for mountain towns does not seem to be easy of solution. Storage is an essential in order to tide over the dry weather, and stored water, either that obtained by collecting the water from apparently pure mountain streams, or that obtained from the same kind of streams contaminated with mine drainage, is in neither case free from objection.

Considerable study has been devoted to both these kinds of water in the laboratory of the Pennsylvania Railroad Company at Altoona. The water contaminated with the mine drainage from the city supply has been frequently examined, also the waters from the Pottsgrove and Brush Mountain reservoirs, which are not in the slightest degree contaminated with mine drainage, have been frequently examined. Some two or three years ago, during quite a dry spell, careful chemical analysis and some bacterial study were made in the laboratory of the Pennsylvania Railroad Company of the waters from both these sources of supply. As previously hinted at, the waters from the Pottsgrove and Brush Mountain reservoirs were found to be quite high in organic matter. The free and albuminoid ammonia showed quite high figures, and, apparently, the organic matter was largely vegetable, and this is what we would expect from the examination of the sources of the water since there is very little human habitation or animal life around these two reservoirs. On the other hand, to our astonishment, the water from the city water supply at Kittanning Point, examined at the same time, showed very small amounts of organic matter. The free and albuminoid ammonia, and the nitrogen as nitrates and as nitrites, were all low. This was the more astonishing since it is well known that on the sources of both the Glen White stream and Baker's run, which furnish the water for the city supply, there are considerable settlements of miners and their families. Personal examination, made at different times by the Altoona board of health, has shown that the drainage, not only from stables but also from water-closets as well as house drainage, is constantly finding its way into these streams.

But the chemical examination of these two waters does not tell the whole story. The bacteriological examination was found still more interesting. Careful examinations made, following the Koch method of counting the families on glass plates, showed that the water from the Brush Mountain and the Pottsgrove reservoirs had from three hundred to five hundred families of bacteria per cubic centimeter, while sani-

ples taken at almost the same time from the Altoona city water supply, and known to be contaminated as above mentioned with house and stable drainage, if not worse, showed in some cases two, and in no case over five families per cubic centimeter. These facts seem very remarkable to us, and have led to considerable speculation as to the reasons why. There is still another fact in addition to what has been stated, showing the difference between these two sources of supply, namely, although the Pottsgrove and Brush Mountain reservoirs are in an air line not more than perhaps five or six miles from the Kittanning Point reservoir, and although the Pottsgrove and Brush Mountain reservoirs are filled with algæ, and the odor and taste very objectionable, as above stated, yet thus far we have not succeeded in finding any of the same kind of algæ in the city water supply at Kittanning Point.

These three facts, namely—no objectionable odor and taste due to plants or algæ, less bacteria per cubic centimeter, and less organic matter in the water, although the sources are known to be more contaminated, all of which are characteristic of one of two sources of supply not over five or six miles apart—seem to us very impressive and worthy of more than a moment's consideration. It is, perhaps, impossible in the present state of our knowledge to do anything more than to give indications, and we would not like to be regarded as saying that we have completely solved the problem and know exactly why the facts are as they are. To our minds, however, the state of affairs is very suggestive. Apparently the reason why the city water supply at Kittanning Point is not as objectionable, in any one of the three items mentioned above, as the waters from the Brush Mountain and Pottsgrove reservoirs, is because the city supply contains mine drainage. So far as our knowledge now goes, this is the principal known difference between the two. The strata do not very greatly differ, although it is fair to say that they are not of the same geological horizon.

This supposition, viz., that mine drainage is, in a certain sense, valuable in a water supply, seems to us sufficiently plausible to warrant us in spending a moment or two with it.

It is well known that within the last five years our knowledge of the influence of iron in diminishing the amount of organic matter in water has very largely increased. The well-known Anderson method for the purification of water containing organic matter in solution, and the Webster electrical method for the treatment of sewage, are instances of this increase in knowledge. Apparently hydrated oxide of iron, however obtained, when mixed with water containing organic matter in solution, coagulates and precipitates the organic matter. This seems to be the explanation of the Anderson method of water purification, and also, to a greater or less extent, the explanation of the Webster electrical method of treating sewage. If this be true it seems to fur-



nish a clew to the peculiarity in regard to the Altoona water supply before noted. As already stated, mine drainage as it comes from the mines is largely proto-sulphate of iron. It is well known by every chemist that when proto-sulphate of iron in water solution is exposed to the sun and air decomposition takes place, resulting in the separation, as hydrated oxide, of a portion of the iron present, and the change of the rest of the iron from the proto-sulphate to what is known as the sesqui-sulphate. This separated hydrated oxide, as is well known by those who have traveled through the coal regions at all, sinks to the bottoms of the streams, adhering to the stones and soil and giving them a yellowish appearance. It is commonly known among the country people as sulphur, but, as above explained, it is in reality hydrated oxide of iron, and if the deposit is sufficiently large and long continued, would result in what is known as "bog iron ore." If this chemistry is correct, we have here, it seems to me, all the conditions for the self-purification of water contaminated with organic matter, namely, hydrated oxide of iron, separating as the water stumbles over the stones more or less, and in contact, so to speak, with the contaminated water. This view receives strength from some analyses made last summer during the low water of the Kittanning Point water supply. Some samples of water were obtained which were cloudy from separated oxide of iron. An analysis was made of the water without any attempt at sedimentation or filtration—just as it was obtained. Then some of the same sample was filtered and the separated oxide of iron carefully examined, when it was found that more than three-quarters of all the organic matter which the first examination had revealed were in the separated oxide of iron. It, therefore, almost seems as if the mine drainage in the Kittanning Point water supply was the real explanation of the freedom from organic matter, the small number of bacteria, and the fact that this reservoir is not the home of objectionable algæ or plants imparting an objectionable odor and taste to the water. It is, perhaps, too soon to positively assert this, and further studies on the subject are, of course, greatly to be desired, but the indications seem so strong that we cannot forbear bringing them forward and urging their consideration.

If the explanation which we have suggested is the correct one it is clearly evident that mine drainage is not the objectionable element in water supplies that it has previously been supposed to be. In reality it seems as if it was one of nature's methods of the self-purification of streams.

Unfortunately, however, as already stated, the distance that the water flows in the case of the Altoona water supply after receiving the mine drainage, before it becomes stored in the reservoir, and, indeed, before it finds its way into the service pipes, is so short that quite a portion of the unchanged mine drainage, as well as probably nearly all of the iron above referred to in the sesqui-salt form, remains in the water, and



this is certainly objectionable. The query remains whether it is possible by any means, on the large scale, to remove this sesqui-sulphate of iron, and also any unchanged mine drainage before it gets into the service pipes. Upon this point two suggestions have been made. Engineer Knight, before referred to, suggests that the storage of the water supply for Altoona in the proposed new reservoir be collected during the seven or eight months of the year when the flow is large, and when the mine drainage is a very insignificant element, and that during the dry weather, when the flow is small and the mine drainage proportionately large, the water be diverted around the reservoir and allowed to run to waste, the service being maintained from the storage. This, of course, is a very reasonable method of treating the problem, with the unfortunate necessary condition that whatever the flow of the stream is during the two or three months of dry weather, is lost, and this might, under certain conditions, be a serious element. In view of this state of affairs careful experiments were made in the laboratory of the Pennsylvania Railroad Company, which showed that if water contaminated with mine drainage is allowed to flow over broken limestone, or put in contact in any way with limestone, the iron separates in the form of hydrated oxide, being replaced by lime, with the result of leaving an amount of sulphate of lime in the water equivalent to the sulphate of iron previously there. This seems to indicate a very simple method of removing the mine drainage, and at the same time helping the self-purification above referred to, namely, supply the stream during its two or three miles of flow before it reaches the reservoir with broken limestone or ballast and allow the water to flow over it. More or less reaction takes place, resulting in the separation of the hydrated oxide of iron, as before described, and the separation of this along with the coagulated filth. If sufficient time elapses, and the contact with the limestone is sufficiently long, both of the ends desired, viz., removal of the mine drainage and separation of the filth, would apparently be accomplished, and the water which reaches the reservoir would practically be free from organic matter in solution, and also would be free from mine drainage. It would only be necessary for it to stand in the reservoir long enough for the coagulated filth and oxide of iron to settle to the bottom, and then proper precautions be taken in drawing off the water not to disturb the layer on the bottom in order to furnish to the service a water probably as pure as most of the public water supplies of the country. It is, of course, fair to say that the proposed method would result in increasing the hardness of the water. Just how serious a matter this would be it is not possible to state at the present moment, but the analyses already made show that it is probable that the total sulphate of lime in the water would not exceed five to eight grains per gallon which, as is well known, is a small amount. Many public water supplies have more.

The effect of limestone on water contaminated with mine drainage is claimed to be the reason why Philadelphia does not suffer very badly from the sewage of the towns on the Schuylkill river higher up the stream. I have seen it stated that between Reading and Philadelphia the water flows over a strata of limestone, when the reaction above described unquestionably takes place, resulting in the self-purification of the Schuylkill river water. Whether this be true or not, it is certain that limestone in contact with water containing sulphate of iron throws out the iron in the manner above described.

One point further: As the country fills up with inhabitants, the difficulty of obtaining pure water supplies for towns and cities, be they either mountain towns or situated along the banks of streams, will unquestionably increase, and it looks as if our hope for the future years' water supply rests not so much in costly ways of securing a supply of pure water, and then devoting great effort to keeping this supply pure, as it does in taking the most available source of water supply, and rendering it wholesome by proper treatment. If the explanations and discussion given above are approximately correct, those cities which have mines situated on their sources of water supply have exceptional facilities for rendering their water supply fairly wholesome, by simply making use of the knowledge already accumulated, and the means which nature and commercial operations have put in their hands.

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Information from the Records of the Altoona (Pa.) Board of Health.

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By C. H. CLOSSON, M. D., *Secretary of the Board.*

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I think we all agree that while the work of sanitary bodies is not always accredited with that importance to which it is justly entitled, yet the good resulting from this work, when properly performed, cannot be estimated by a monetary value; for what is of greater importance than the protection afforded by good sanitary surroundings? And this can only be secured by a proper observance of sanitary laws, and it is only as these laws are properly applied that immunity is secured from the many hidden dangers which lurk on every hand.

While not in the majority, yet there are many who look upon the efforts put forth for their protection by sanitary bodies as unnecessary, and in a measure as meddling with their individual rights, they preferring to move along with their antiquated ideas of their duty toward the preservation of their health and that of their fellow creatures, as if man were only placed here to make his body a convenient receptacle for all the poisons and disease germs that are caused by failure to obey the laws of nature and sanitary science as the result of pursuing such course, a great many lives are lost each year, sacrificed as it

were, to misconception of duty and want of enforcement of proper sanitary laws for the time has long since passed for attributing disease and death to an angry Deity or to some special fatality.

With the knowledge that in all diseases there is a primary exciting cause, and knowing the uniformity of the predisposing causes of certain diseases, and that they are preventable, leads to the conclusion that could boards of health have entire control over each habitation in the district over which they preside as guardians of the public health, then such diseases as diphtheria, scarlet fever, typhoid fever and small-pox, all of which are classed with the preventable diseases, could be so controlled that they would be found only in isolated cases where the contagion or infection was transmitted from some outside source.

It is possible to have such a condition of sanitary matters as will insure immunity from the ravages of this class of disease; but to accomplish such results it will be necessary to educate the general public to the absolute necessity of strict observance of sanitary laws under all circumstances and under all conditions.

In addition to this the power and authority of boards of health should be so increased and extended that they could cause to be removed at once anything that might threaten the health of the community, even though it be maintained by the municipality itself; and until boards of health are given authority that will enable them to say to the powers that be, that sanitary laws must be obeyed, it will be a difficult matter to accomplish these results.

After what has been said as to what may be accomplished, we will now give a short *resumé* of the work done by the local board, along with some statistics compiled from the records. But so that you may get a better idea of the work in hand here, it may be well to give a short sketch of the history of this city, otherwise you may be misled in your conclusions, as from the Altoona of to-day you get but a faint idea of what it was a few years ago.

The town was first located in 1850, and a large portion of the original plot was nothing better than a swamp. In fact all the low land in the city plot is wet and boggy; from this you will get some idea of the foundation upon which the city is built.

In 1854 the town was chartered as a borough with a population of 2,000. In 1868, with a population of 10,000, the old charter was surrendered, and the borough took on the dignity of a city, and had delegated to it power and authority to construct and maintain water works, to build sewers and pave streets; but there was not the slightest move toward securing sanitary protection for the city for quite a while after this, not even the building of a public sewer, as up to this time drainage was only secured by filling up the lots, and a great deal of the filling used was objectionable on account of containing refuse and organic matter.



The city water works were erected in 1871 and enlarged in 1880 to 1884, and now the city has an ample supply of pure, fresh water, and only during long-continued summer droughts is the city placed on short supply. This necessarily compels the citizens in certain localities to have recourse to well water, the use of which, in thickly settled districts, is always attended with more or less danger, unless the water is boiled before using.

The present city, with its 35,000 inhabitants, comprising some 7,000 separate and distinct families, and an area within the city limits proper of 14,600 acres, all of which require surface and sub-soil drainage, and for this purpose there are now constructed 11.5 miles of public sewers; this still leaves large sections of the city unprovided with sewer facilities, and in these localities the open ditch is made to take the place of sewers, and at times these become a fruitful source of evil.

In past years, and before the organization of the local board, the city was visited by epidemics of typhoid fever, small-pox, diphtheria and scarlet fever, but of these we have no data. City councils, recognizing the necessity of having some organized body whose duty it should be to look after the sanitary matters of the city, passed the requisite ordinance, and in the spring of 1886 the local board of health was organized. It being but five years since the local board came into existence, it is yet but in its infancy; and for the first two years of this time the data furnished the board, and from which the records were compiled, were both meagre and incomplete, thus affecting the general results for those years.

In reckoning the several death-rates the calculation is based on the rate per cent. per each 10,000 of population, with a pro rata increase of population.

*First*, we will take up those of the zymotic class that are common to this locality, and have prevailed here since the organization of the local board, taking first that scourge of childhood—scarlet fever:

In 1886, with a population of 29,960, the death-rate was 1.3 per each 10,000 inhabitants.

|         |   |   |         |   |   |     |   |        |   |
|---------|---|---|---------|---|---|-----|---|--------|---|
| " 1887, | " | " | 31,220, | " | " | 1.2 | " | 10,000 | " |
| " 1888, | " | " | 32,480, | " | " | 1.5 | " | 10,000 | " |
| " 1889, | " | " | 33,740, | " | " | 2.7 | " | 10,000 | " |
| " 1890, | " | " | 35,000, | " | " | 1.7 | " | 10,000 | " |

The average rate was 1.68 per each 10,000 population per annum.

Taking the average population, the maximum death-rate from this cause was one death to every 4,820 persons living. In the year 1890 the death-rate was one to every 5,333 $\frac{2}{3}$  persons living. One of the ways in which this disease is frequently spread is by having public funerals, and, as is frequently done, using children for pall-bearers, even in cases where death has been caused by scarlatina in its most malignant form, thus exposing the very class of persons who are most susceptible to infection from the poison of scarlet fever.

Diphtheria is a disease that in some respects is very nearly allied to



the former one, not only as regards some of the symptoms, but also as to the conditions which give rise to and propagate the disease.

With the calculation same as in former disease, the death-rate from diphtheria in 1886 was 1.3 per 10,000 population; in 1887, 2.2; in 1888, 5.2; in 1889, 9.4; in 1890, 4. Comparing the deaths from this cause with the number of cases of this disease as reported existing in the city, there was in the year 1888 one death to every 2.08 cases; in 1889, one to every 2.77, and in 1890, one to every 4.64. The maximum death-rate was one death to every 1,015 of population. The rate for 1890 was one death to every 2,500 population.

The large increase of the death-rate for 1889 was due mainly to the following causes. The great flood of that year not only filled a great many cellars with the contents of the sewers, but also in certain portions of the city transferred the contents of the privies into the wells from which the families got their supply of water.

*Second*, the failure to properly isolate persons and families suffering from this disease, many preferring to run the risk of impregnating others with the disease by keeping the facts concealed, rather than that they be debarred from public society or their children denied admittance to the public schools.

Membranous croup, while it may not properly be classed with the preventable disease, yet through mistaken identity may lead to the spread of other maladies with analogous symptoms. On this account, and believing it to be for the best interests of the city, the local board had membranous croup added to the list of contagious and infectious diseases.

The death-rate from this cause, based on each 10,000 population, gives the following percentage: In 1886, 1.6; in 1887, 2.5; in 1888, 2.7; in 1889, 5.3; and in 1890, 4.5. The average rate per annum was 3.32. The average age of the persons who died from the three diseases named was  $7\frac{1}{3}$  years.

Of all the diseases of the preventable class, there is none found to exist so generally, and under all circumstances, as typhoid fever. This may be accounted for from the fact that the agencies which most frequently give rise to this disease are common to all sections, and, as a rule, to impure water. Putrefactive organic and fecal matters, improperly cared for, are the sources from which it most frequently takes its origin. It might be thought by some that in a city located among the mountains, with an altitude of 1,140 feet above the sea level, enteric fever would not find a place; but such is not the case, as the following data taken from the local records will show. With the same base of calculation as in former diseases, the death-rate from enteric fever is as follows, per each 10,000 of population:

In 1886, 3.7; in 1887, 5.7; in 1888, 4.7; in 1889, 5.3; and in 1890, 3.7. The average rate per annum was 4.6. Taking the average population, the maximum rate was one death out of every 1,735 persons living; and

the rate for the year 1890 was one death out of every 2,692 of population. The average age of the persons who died from this cause was 23 years. Taking the number of cases existing in the year 1888, there was one death to every 3.12 cases; in 1889, one death to every 4.44 cases, and in 1890, one out of every 10.6 cases.

While no part of the city was exempt, yet the disease was far more prevalent in the unsewered and those portions where sanitation was most faulty, and where well water was used for all purposes; this water, on being analyzed in several cases, was shown to contain sewage in considerable quantities. There are several things that have aided not only in spreading, but also in increasing the mortality list from this disease. Among these we might call attention to the very careless manner of taking care of the dejecta from typhoid fever patients, it frequently being put into open cesspools without the slightest effort being made toward disinfecting; thus the disease germs are left free to find their way into some water supply, and this disposition of typhoid fever dejecta being made in an open, porous soil with an underlying stratum of clay, and as is frequently the case, the cesspool is located on the most elevated portion of the lot, and perchance but a few feet from the well from which the supply of water is obtained. The local board has publicly called attention to this very pernicious habit, and to the great necessity of boiling all water used from wells, hoping that by thus educating the public to the danger of such practice to avert any further trouble from this source.

I shall now take up cholera infantum, pneumonia and consumption, and while these diseases may not be so readily affected by sanitation as the zymotic class, yet they are influenced, to a greater or less extent, according to the sanitary surroundings; and they are of especial interest to the local sanitary body, as the highest death rates in this city have been from these three causes. From cholera infantum, the death rate in 1886 was 8.3 per each 10,000 population; in 1887, 10.5; in 1888, 7.4; in 1889, 13.3; and in 1890, 12. Taking the number of births in the city in the year 1889, one out of every 18, and in 1890, one out of every 20 children born died from this cause.

Pneumonia has caused a greater number of deaths than any other one disease in the city. In 1886 the rate per each 10,000 population was 7.3; in 1887, 11.5; in 1888, 13.2; in 1889, 14.5; and in 1890, 14.3. The deaths from this cause were not confined to any locality, or to any particular class, sect or age; and the prevalence of this disease can only be accounted for by the severe and sudden atmospheric changes to which our climate is subject.

Consumption. The death rate, being based on each 10,000 of population, in 1886 was 7; in 1887, 13.7; in 1888, 14.1; in 1889, 14.5, and in 1890, 12. The average rate from this cause was 12.26. The percentage of deaths from consumption to the total mortality for 1890, was

7.23. The average from this cause in 1888 was one death to every 760 persons living ; in 1889, one to every 688 $\frac{1}{2}$ , and in 1890, one to every 833 $\frac{1}{3}$ .

In summing up the location and circumstances under which a large majority of the deaths took place from the diseases named, we find it was in localities where there are no sewers, and in houses where the atmosphere was unwholesome on account of defective soil pipes and wet, filthy cellars, and where impure well water was used ; thus the health of the inmates was vitiated and they were rendered easy victims to disease. While faulty sanitation was the direct cause in many cases, quite a number were due to direct contagion, the disease being communicated in many instances with fatal result, some preferring to run the risk of communicating disease to others, rather than to be deprived the pleasure of society and attendance on places of public resort. I am sorry to say that it too frequently happens that the attending physician inculpates himself by lending his aid and assistance in covering up and keeping hidden the true nature of the disease.

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#### Some Neglected Points in Railroad Sanitation.

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By HORACE R. SMITH, A. M., M. D., of Altoona, Pa., Medical Examiner, Pennsylvania Railroad Volunteer Relief Department.

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The question of general railroad sanitation is one of such wide scope that to discuss it in any sense exhaustively would require an unnecessarily large proportion of the time of this convention ; much of the matter, withal, would be but a reiteration of both acknowledged and mooted points.

In view of this fact, I have deemed it best to invite your attention to a few neglected points in the subject, which appeal to me as ripe for early remedial measures.

I consider it eminently befitting, by way of preface, to state that the company in whose service I have the honor to be has always taken a warm interest in the subject of sanitation, and heartily desires to initiate any procedure which will promote the physical welfare either of the traveling public or of their employes.

It was the earnest desire of the Pennsylvania Railroad Company, through the relief department and its efficient corps of medical examiners, to accomplish much in the way of general sanitation, but thus far only a portion of the work planned has been accomplished.

"Faithful are the wounds of a friend." As an employe and friend of one of the greatest of railroads, I criticise, not carpingly but honestly,



desirous only of calling attention to a few of the more prominent hindrances in the path leading to that "Ultima Thulé"—perfect sanitation.

Considering the health of the "traveling public" as paramount, I will only discuss those questions pertaining to this, reserving all others, as to the health of the employes, though not a whit less important, for future consideration.

Let us first, as an initiatory step, take a cursory glance along the line of a railroad, at the sanitary arrangements of the various stations.

In the larger cities, where there is an adequate water supply and sewerage, the water-closets are usually in pretty fair condition; but even here, where the problem seems easiest of solution, the plumbing is often defective, the ventilation bad, and a little neglect of proper attention changes a moderately good system into a veritable "Augean stable."

I call to mind an examination I once made of a water-closet and attendant pipes; everything seemed in an apparently sanitary condition until I got to the cellar, where I found, by strange anomaly, an exposed trap which was absolutely impervious, and the excrementitious fluids and solids were meandering their own sweet way through the cellar.

I cannot refrain from the passing comment which is a fact, that the person who spent the major part of his time above this whited sepulcher was affected with malarial fever and digestive disorders.

My attention was called not long ago, by a plumber, while at work upon an administrative office building, to the singular closing of an iron drain pipe, about three inches in diameter, leading from a urinal; the lumen for the whole length, several feet, was almost entirely filled up with a gelatinous, spongy substance with a pungent, fetid odor.

This was a remarkable evidence of the fact I have often noticed before of the tendency of all iron pipes to allow coagulations to adhere to the sides, even though the matter supposed to pass through be entirely liquid.

It seems to me that all such pipes should be periodically cleansed with strong lye, or sal soda, as often as possible. I merely narrate these circumstances to show what a "whited wall" the whole system of water-closets may be if proper and adequate attention be not devoted to them.

However, I must pass on to the subject of country closets, and here we are brought *vis-a-vis* with a problem of much more difficult solution. The need of a remedy is a crying one, and "appeals to heaven;" for may not any of us bring to mind a peculiarly atrocious closet along the line of some railroad, with its pit of seething filth, unkempt and soiled floors, where one pays tribute to the Goddess Cloaca only at the risk of his life?

Acknowledging the evil, as all observers do, what remedy commensurate can be suggested, which will be not so expensive in application as to commend itself as feasible to a railway superintendent? Two methods



suggest themselves, namely, an absolutely water-tight pit, and the dry-earth system. If a pit must be used, it should be well cemented, allowing of neither ingress nor egress of fluids from the surrounding surface; disinfectants should be systematically used, the ventilation especially looked after, and, lastly, the vault itself should be periodically excavated.

In winter a thorough ventilation can be very simply arranged by running a ventilating pipe from the vault direct to the furnace or stove flue. Apropos of this method of ventilation, I would say that I have secured very effective results by running a pipe direct from the soil-pipe in my cellar to my furnace flue, giving me perfect ventilation.

The "dry-earth system" of closets is ideal in its conception, simple in its arrangement, and easily carried out. It seems to me that it is the only proper method for country stations, and I would like to see it adopted. The station agent, with the assistance of a special detail of men from the maintenance of way department, could be made responsible for the proper maintenance of the closet, using as a good substitute for the dry earth the sifted ashes from the various stoves.

From a careful study of the subject, I do not see why the practical application of this system should be at all expensive, for the total amount of excrementitious material in the large majority of country stations is small, and the work train or any other simple method could dispose of it at slight additional expense. An ordinary car of special construction could easily be used over several divisions, and the difficulty of securing the desired labor is solved by the fact that the ordinary foreign laborer available is not averse to performing such duties.

The subject of sanitation, as regards passenger cars, is one which needs much thoughtful consideration, and is replete with problems of most difficult solution. The present methods of heating, ventilation, supplying drinking water in immovable tanks, and the average water-closet, are all more or less defective and need readjustment.

It is acknowledged by all that the ventilation of passenger cars is not what it should be; but the difficulties in the way are so great, and the exigencies which arise so many, that the problem is almost unsolvable. Besides the difficulties of construction, due to the American system of building railway cars, there is the rapid motion of the train through space, the necessarily small breathing space for a large number of passengers, and lastly and always the angularities of human nature, which, in the traveling public, bristle like the quills of the "fretful porcupine." The young, the old, the thick, the thin, the warm, the cold, all disagree as to the character and amount of ventilation.

Who of us, on entering a car which has been running all night, has not noticed the powerful penetrative odor of human exhalations, like that of a bedroom the windows of which have not been raised at night? On many railroads the means of ventilation are almost *nil*; on the Pennsylvania railroad, however, the openings at the top of the car are a very

good means of giving a fair supply of fresh air, if the instructions as to their attention are properly carried out.

I would that I might offer a practical suggestion as to some feasible plan for perfect ventilation of passenger cars, but I must confess that the problem is just as puzzling to me as to those who have given the subject undivided time and attention. I trust, however, that some one may discover the solution for the benefit of the undeterminate, yet relatively very large number of people, who spend much of their life in the cars. There ought certainly be some radical changes made in the arrangements of tanks for drinking water in passenger cars generally, for the water one has to drink on some railroads is oftentimes both disagreeable to the taste and harmful to the whole digestive apparatus. These tanks are usually constructed in the car, immovable, almost a "cul-de-sac," with a single outlet, and placed in such an inconvenient position that it is virtually impossible to thoroughly clean them. They are filled with water usually by a hose from the top of the car, a chunk of ice is tossed in, and this process goes on from day to day, and week to week, until the sediment on the bottom and sides of the tank may become a prolific source of disease. On this account, to the confirmed dyspeptic, the mother with thirsty little children, and in fact all persons subject to digestive disorders, travel in summer becomes a veritable *bete noir*. It would be a boon devoutly to be desired, if some of the bright minds in the service of the various railroad companies could conjure up a practical plan to give us pure air and pure water.

It has been suggested\* that a tank be constructed, consisting of a tube within a tube, so that the inner one could be extracted and cleansed; this should be placed in such an accessible position that would assure adequate and proper attention.

The subject of passenger car water-closets needs more than a passing consideration; for have we not, in traveling over the various railroads of the country, rebelled against the odors and sights of the closets of some of the passenger cars? The ammoniacal smell and the oftentimes soiled condition of the funnel-shaped tube leading externally, are sufficient to nauseate the least squeamish.

To call attention to an evil is a simple matter, to produce a remedy sometimes involves so many difficulties as to render the task almost insuperable. I feel bound to say, in this connection, that the Pennsylvania Railroad Company has endeavored to do away with all these evils, and, as a result of constant experimentation, has made marked improvements. One notable improvement which has already been made is the laying of an asphalt floor in all water-closets; this is easily cleansed, and a proper application of the excellent P. R. R. disinfectant does away almost entirely with the usual disagreeable odor. It would be a

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\*Transactions American Public Health Association, 1889—Dr. S. W. Latta, Chief Medical Examiner P. R. R.

great improvement, if it be at all possible, to run the exit tube from the water-closet straight down without a deflection, thus avoiding the soiling of the sides.

Before leaving the subject of water-closets in passenger cars, a question of grave importance arises, namely, with the present system as it is, during an epidemic of cholera or typhoid fever, what would hinder the scourge from being spread broadcast over the country almost, as it were, on the wings of the wind? The virulence of the poison is most marked in the excreta, and this, being spread promiscuously along the roadbed, would certainly be a menace to the public health. The only feasible solution of this problem, as it appears to me, lies in the dry-earth system; a proper receptacle being necessarily carried along with the car, to be emptied and cleaned at proper intervals. Hitherto the question has not arisen, but the time may come when prompt and adequate measures must be taken.

Another evil which appeals daily for remedy is the commonly soiled condition of the strip of carpet or matting running down the aisle of many passenger cars, soaked in the sputa of innumerable passengers, the cachectic and consumptive alike, it cannot but be a source of danger to the public health. The carpet is likely to become impregnated with disease germs, which, on being disturbed by the thousands of restless feet passing through the car, rise into the air in an impalpable powder, to be inhaled into the lungs of the unsuspecting traveler.

The recent studies on the subject of bacteria and the acknowledged contagiousness of the bacillus of tubercular phthisis make this a real cause for alarm. I firmly believe the carpet should be dispensed with, and in its stead a rubber strip might be used, or if that be too expensive, use nothing, the well-painted or asphalted surface being easily mopped up by the car cleaner.

This trite adage, "What is everybody's business is nobody's business," finds a true exemplification in railroad as well as in general sanitation. Many evils remain uncorrected from the mere fact that those who first notice them shrug their shoulders with the remark that it is not their business, relegating to the next man the duty of reporting to the proper officer. This condition of affairs is to be deprecated; and, as a closing suggestion, I would earnestly advise that a proper officer be appointed, a "general sanitary inspector" if you will, who would be duly empowered by the proper authority to have a general supervision in sanitary matters, and to cause to be adopted such remedial measures as would be consonant with evil to be abated and with reasonable expense. The limitation of the responsibilities, with provision for remedy, would be a long step in the right direction, and would doubtless be conducive of good results.

## APPENDIX F.

## QUARANTINE, DISINFECTION, EPIDEMICS AND SPECIAL SOURCES OF DISEASE.

## 1. Quarantine.

- (a) Maritime Sanitation in use at the Quarantine Station, Charleston, S. C., 1890.
- (b) The Act Creating the Quarantine Commission.
- (c) Appointment of the Secretary, Dr. Benjamin Lee, a Member of the Board of Commissioners to secure a suitable site for a Quarantine Station on the Delaware River.
- (d) Philadelphia Lazaretto Station. Modes of Disinfection.
- (e) Abstract of Sanitary Reports of the United States.
- (f) Resolution in regard to the Importation of Spanish Rags, forwarded to the Boards of Health of Philadelphia, Pittsburg, Chester and Erie.
- (g) Communication from the Ohio State Board of Health relative to the Shipment of Bodies dead from Diphtheria.
- (h) Communication from the Ohio State Board of Health relative to Contagious Diseases.

## 2. Epidemics.

- (a) Diphtheria at Bangor, Northumberland county.
- (b) Second outbreak at Bangor.
- (c) Small-pox at Scranton, Lackawanna county
- (d) Small-pox at Erie, Erie county.
- (e) Small-pox at Johnsonburg (Quay P. O.), Elk county.
- (f) Dysentery at State Hospital for the Insane, Norristown.
- (g) Diphtheria at Heckersville, Schuylkill county.
- (h) Typhoid Fever at Beaver Meadow.
- (i) Diphtheria at Galeton, Potter county.
- (k) Typhoid Fever in the Bethlehems.

## 3. Special Sources of Disease.

- (a) Disinterment of Bodies.
- (b) Small-pox on SS. Helmsley.
- (c) Leprosy in Delaware county.
- (d) Use of the Flesh of Pregnant Cows as Food.
- (e) Pollution of the Water Supply of South Bethlehem.
- (f) Letter of the Secretary to the Burgess of St. Clair, relative to Defective Drainage.
- (g) Streams Polluted by Sewage.
- (h) Pollution of Well at Sheridanville, Allegheny county.
- (i) Stagnant Pond at Weissport, Carbon county.
- (k) Nuisance at Nazareth, Northampton county.
- (l) Slaughter Shops, by R. Harvey Reed, M. D., Mansfield, Ohio.
- (m) Analyses of Drinking Water, by Chas. M. Cresson, M. D., Philadelphia.



## 1 QUARANTINE

## (a) Maritime Sanitation in Use at the Quarantine Station, Charleston Harbor, South Carolina, 1890.

[Published by the Charleston Board of Health.]

The administration of the quarantine laws of South Carolina at the port of Charleston, by a special act of the state legislature, is vested in the board of health of Charleston, subject to the advice and supervision of the State Board of Health of South Carolina. The Charleston board of health is composed of the following citizens:

J. L. Tobias, chairman; M. Michel, M. D., Allard Memminger, M. D., R. M. Marshall, Hall T. McGee, T. R. McGahan, G. E. Manigault, M. D., C. P. Aimar, P. C. Trenholm, A. Sydney Smith, M. A. Connor, H. B. Horlbeck, M. D., secretary of the board and health officer.

Dr. R. Lebby is the quarantine officer of the port, and resides at the quarantine station, where a neat and commodious residence has been erected for his use. The station is provided with a fever hospital and pest house.

A naphtha launch has recently been purchased by the board, which is used for boarding vessels, and ensures a quick and reliable communication with the city.

The system of maritime sanitation herewith presented, and now used for Charleston harbor, is a contribution to the general information extant on this subject.

"Its law is progress—a point which yesterday was invisible, is its goal to-day, and will be its starting post to-morrow."

The utilization of heat, dry and moist, has become a recognized agent for disinfecting purposes, and in recognition of its merits the health authorities at Charleston have erected a plant, after a careful study of the one in use in New Orleans. It is believed that the changes made in the construction of the cylinder and mode of introducing steam heat are worthy of the attention of sanitarians.

The Holt system of maritime sanitation in Charleston was initiated February 5, 1890, on the Norwegian bark John Haussen. Ballast discharged and vessel disinfected and fumigated.

The Charleston quarantine station is situated on the east end of James island, on or near the site of Fort Johnson. It can be seen on the plate illustrating Charleston harbor, and its relations observed as to other points. It is about three miles from Charleston, and is conveniently near to the track of vessels coming to the city. It is provided with two wharves, affording mooring with twenty-two feet of water at low tide.

CHARLESTON HARBOR.











VIEW OF VESSEL BEING FUMIGATED AND WHARF FOR BALLAST DEPOSIT.

On the right. View of Barque undergoing Maritime Sanitation. To the left, Wharf for Lifting Ballast. Cars and Shed for Steam Ballast Lift.

One of these wharves is for unloading vessels having ballast, the other for vessels undergoing fumigation and disinfection. The rules governing quarantine require that all vessels with ballast from an infected or suspected port, shall have the same taken out and deposited at the station. This wharf is provided with a steam lift, which has a capacity of twenty tons an hour. The ballast is carried on cars specially constructed, on an iron rail track to such point as is convenient to the station.

The wharf for vessels to be fumigated has a frontage of 200 feet. Along the entire front there is a twelve-inch galvanized iron tube connecting with the furnace, hereinafter described, to deliver sulphur dioxide gas, also it is provided with a two-inch pipe connecting with the tank containing bi-chloride mercury solution.

The plant has given the fullest satisfaction.

The cylinder furnishes steam heat to any desired degree— $240^{\circ}$  being used.

The furnace on a recent occasion has given gas testing eighteen per cent. dioxide of sulphur, and the mercury solution is used with ease and despatch.

All clothing, bedding, hangings, mattresses, etc., are taken from vessels undergoing maritime sanitation and placed in cylinder, and allowed to remain fifteen to twenty minutes, subjected to a temperature of  $230^{\circ}$  dry and moist heat, which it is believed thoroughly destroys all bacteria inimical to human life. The vessel is thoroughly washed down inside with bi-chloride of mercury solution (1 to 1,000 or 2,000, as necessary).

After an entire cleaning up of the vessel the hatches are covered over and fumes containing eighteen per cent. sulphur dioxide gas are forced in and the foul air driven out until vessel is thoroughly filled up with the disinfecting medium. This is allowed to remain from twelve to twenty-four hours.

In case of decided infection or danger the vessel and ship's company are kept at quarantine for observation for five days after these processes are carried out.

In accordance with an invitation from Dr. C. P. Wilkinson, president of the Louisiana State Board of Health, two representatives of the Charleston board of health (engaging the services of a draughtsman) visited New Orleans, June 1, 1889, the occasion being the opening and inspection of the New Orleans plant by the authorities of the State of Louisiana.

A careful study of their plant was made, and new plans were drawn out, from which the present plant was constructed.

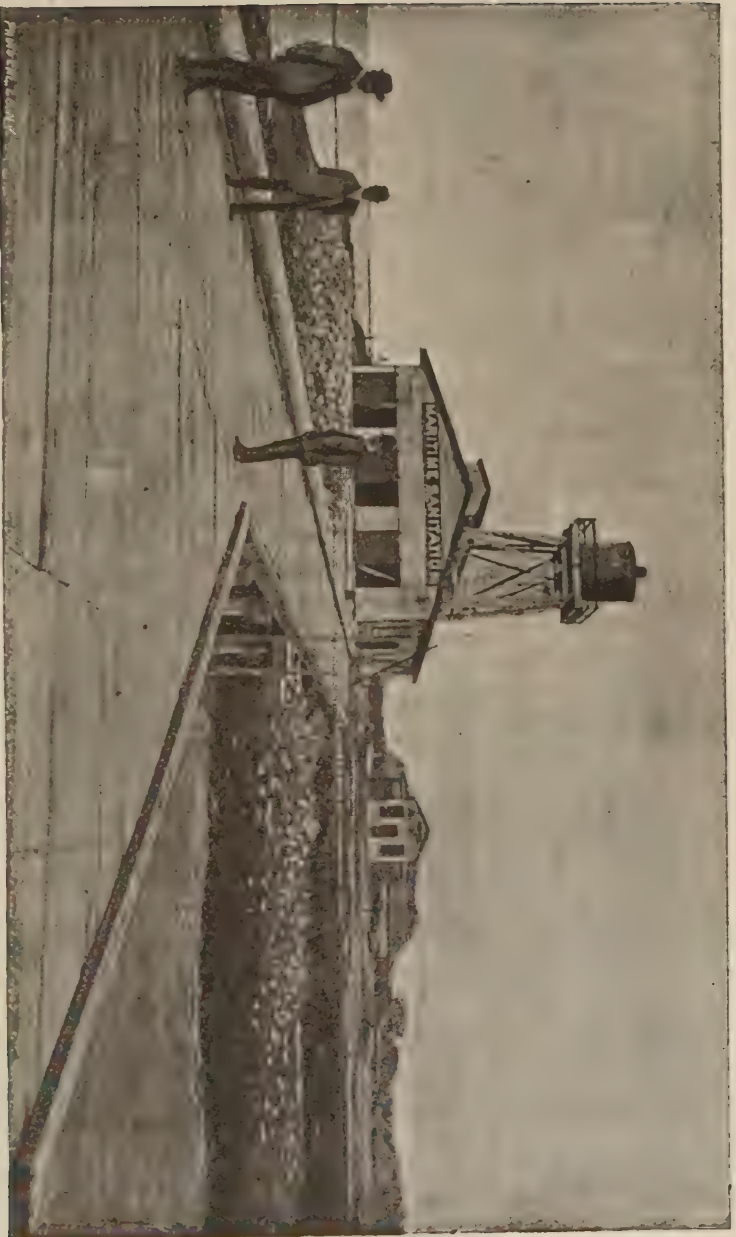
A cylinder for dry and moist heat was made, thirty feet long by eight feet in diameter, constructed of one-fourth inch flange steel, longitudinal seams double riveted, the heads being made hemispherical, and secured by eye bolts and nuts, this plan being common to the Geneste & Hirsch, and the New Orleans disinfecting apparatus. A crane was also

provided for swinging the movable head out of place. The cylinder is covered with hair felting and canvas to prevent radiation. A double track made of  $1\frac{1}{2}$ " x  $2\frac{1}{2}$ " iron, suspended from top of, and running the whole length of cylinder connects, by movable rails, with an outside track suspended from the beams of the building.

On this track rolls a truck thirty feet long, made in sections, from which are suspended clothes racks; above the racks is a canvas cover to prevent any dripping of condensed steam, and beneath is a galvanized wire netting to catch any falling articles. Along the bottom of cylinder is laid a double manifold, forming two pipes four inches in diameter, extending the whole length, connecting at the center, through bottom of cylinder with a Tee pipe. On the sides of this manifold are circular openings, five-inch centers, and with these openings connect one-and-one-half-inch diameter pipe coils, secured to manifold by collars on ends and nuts, these coils lining the inside of the cylinder. At the ends of manifolds are pipes fitted for drawing off the condensed steam; these pipes being laid along one side of manifold, and passing back from ends to center, where they connect with valves outside. There is also a perforated steam pipe on opposite side of manifold, entering at center and passing towards both ends of cylinder for moist heat. Steam being admitted through the center at Tee pipe, passes into one-half of manifold, its whole length, thence through one end of coils (water passing out of ends of manifold) thence around coils and out of other half of manifold, making a complete circuit of coils, and perfect circulation. There is also a drain pipe in bottom of cylinder near center.

The manifold and circulation are unlike the apparatus in use at New Orleans. The cylinder is provided with two weighted safety valves set at ten pounds, also with steam gauge and thermometer.

The fumigating apparatus consists of a sulphur furnace composed of two pans made of cast iron, three feet wide, five feet long, and four inches deep, bolted end to end, covered over at top with three-sixteenth plate forming a wagon top twenty-one inches above pans, having doors at ends for charging with sulphur, provided with ventilators near the bottom. In the top of this cover at center is a ten-inch opening with curtains of sheet iron on either side dropping down to within four inches of bottom of pans; connecting with this opening is a pipe leading down to within six inches of the bottom of a reservoir, made of one-eighth foot iron, thirty inches in diameter by five feet high, placed alongside. At the top of this reservoir is a second pipe leading to a No. 4 exhaust fan, and discharging into a twelve-inch pipe of galvanized iron running to head of wharf, where, by suitable connections, it is led into hold of vessel. The pans rest on a brick foundation, forming a small furnace at one end (with doors for firing and controlling draught), from which fire and smoke pass under bottom of pan to the opposite end and thence to stack.



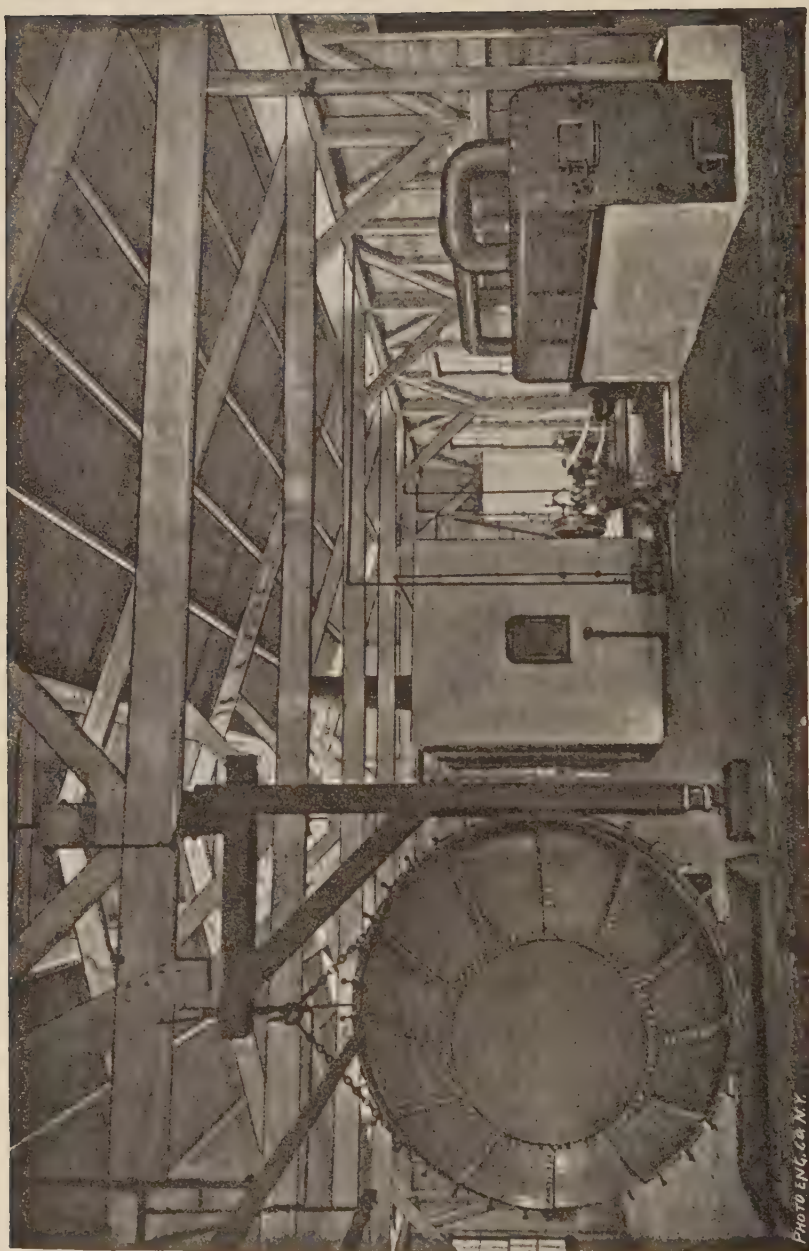
VIEW OF MARITIME SANITATION BUILDING.

With Tank for Corrosive Sublimate Solution—Face of Quarters for Ship's Company.









VIEW OF INTERIOR OF MARITIME SANITATION BUILDING.

End of Cylinder for receiving Clothing, Bedding, etc., to the left. Furnace for Sulphur Fumes to the right. Engine and Boiler in Centre.

PHOTO ENG. CO. N.Y.

Upon suitable connections having been made with the vessel, by using asbestos twilled cloth pipes to allow for the rise and fall of tides, etc., a small fire is made under the pans, heating them up to  $400^{\circ}$ , or sufficient to ignite the sulphur; this can be ascertained by occasionally throwing in small pieces of sulphur, care being taken not to heat the pans too hot as this would sublime the sulphur. As soon as the proper heat is obtained the pans are charged with about one hundred pounds of sulphur each; the fan started, drawing the fumes under the curtains, through the reservoir (there depositing any fire, and being partially cooled) thence through fan and forcing them through twelve-inch pipe to vessel. This fan being driven by a  $5 \times 7$  center crank engine.

Upon a tower thirty-five feet high is erected a wrought iron tank ten feet in diameter by nine feet high, covered, and on the top of this cover a large sized spirit barrel is secured, having a plug in the bottom; there is also a number four brass-lined pump connecting with this tank to supply it with water. pipes also lead from the tank to the head of wharf, where suitable connections are provided for hose. The mercury solution being deposited in barrel on top of tank is discharged into tank through plug in bottom where it is mixed with the water in the tank. One-inch four-ply rubber hose and nozzles are provided for conveying contents of tank from wharf connections into hold and vessel.

A forty-horse-power, return tubular boiler, set in brick work, supplies steam for cylinder, engine, and pump, the whole apparatus being contained in a building seventy-eight feet long by forty-one feet wide.

In applying the moist and dry heat to clothing, bedding, etc., the same is hung and laid on the racks, arranging them as openly as possible. Steam is then turned on to the coils for about fifteen minutes, expanding and driving the air out of the cylinder; the racks are then drawn into the cylinder by a rope and pulley, the movable track removed and the head closed and secured. After the temperature has reached  $180^{\circ}$ – $190^{\circ}$  of dry heat the steam is turned into perforated pipe at the bottom of cylinder till it reaches a pressure of ten pounds, after a lapse of five minutes this pressure is turned off and applied again; in so doing the air confined in pillows, mattresses, etc., is expanded, and by applying the heat a second time it penetrates to the center of same. After keeping this moist heat on for about fifteen minutes more it is allowed to escape, when the heat from coils will run the thermometer up to  $230^{\circ}$ – $40^{\circ}$ . The bolts in head are then slackened and the vapor remaining in cylinder allowed to escape. The head is then swung back, the movable track replaced, and the racks run out, when everything will be found perfectly dry. No leather or rubber goods should be placed in this cylinder.

We have thus described the present status of maritime sanitation in Charleston. As in the past, the board of health of this city have endeavored to utilize every scientific appliance of merit conducive to the



highest efficiency, so they now pledge themselves for the future to continue in this good work as long as the important mission of keeping contagious and infectious disease from our common country is entrusted to their care.

OFFICIAL REGULATIONS FOR THE GOVERNMENT OF THE QUARANTINE AT  
THE PORT OF CHARLESTON, S. C.

CHARLESTON, S. C., *February 1, 1890.*

From and after this date the following charges and rules for the government of quarantine at this port will be enforced:

*Act of the General Assembly, Ratified December 17, 1889.*

To amend section 985 general statutes of South Carolina:

“That in every port in this state, where the Holt system of maritime sanitation is in use the following charge shall be enforced, to wit:

*Inspection Fees.*

|                                    |        |
|------------------------------------|--------|
| Every schooner or brig, . . . . .  | \$8 00 |
| Every bark, . . . . .              | 10 00  |
| Every steamship or ship, . . . . . | 15 00  |

*Fumigation and Disinfection Fees.*

|                                                            |         |
|------------------------------------------------------------|---------|
| For every schooner, bark or brig under 500 tons, . . . . . | \$50 00 |
| For every schooner, bark or brig over 500 tons, . . . . .  | 60 00   |
| For every steamship or ship under 1,000 tons, . . . . .    | 75 00   |
| For every steamship or ship over 1,000 tons, . . . . .     | 100 00  |

In all cases the quarantine officer will collect the charges made against the vessel before giving permission to leave quarantine either by captain's draft on consignee, or in currency, and shall return the same to the board charged with the administration of quarantine at such port, who shall be responsible for the disbursement of the same.

*Quarantine Code.*

I. All vessels from infected or suspected latitudes arriving with plague, cholera, small-pox, yellow or typhus fever on board, or having had same during voyage, must be directed by the pilot to proceed to Sapelo national quarantine station.

II. Any vessels arriving at this port bearing the certificate of the national quarantine officer, must be brought to anchor at the quarantine station, and there remain until released by the order of the board of health.

III. Vessels from any foreign port direct, or via American ports, with or without sickness on board, will, during the entire year, be compelled to anchor and remain at the quarantine station until released by written permit of the quarantine officer.

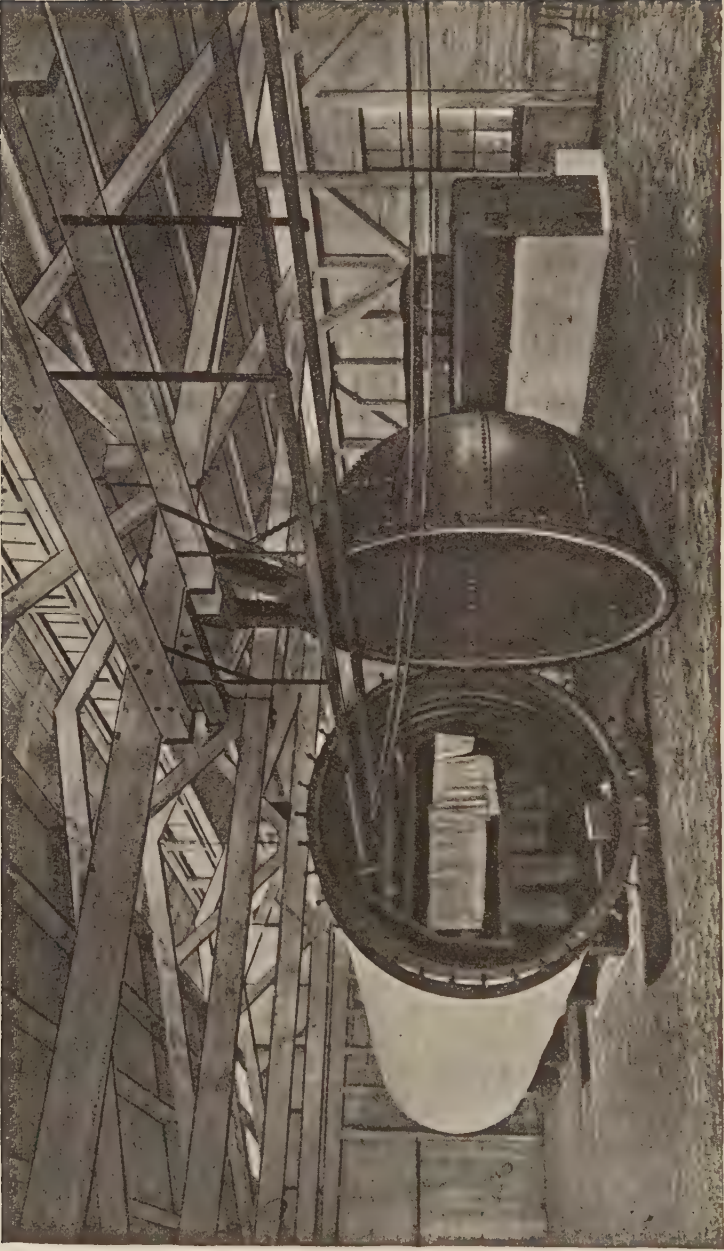


VIEW OF OPEN CYLINDER, AND TRUCK LOADED WITH CLOTHING, ETC., BEFORE ENTERING.









VIEW OF CYLINDER-TRUCK WITH CLOTHING INTRODUCED.

IV. All vessels arriving at this port with sickness on board, or having had same during voyage, will, at all seasons of the year, no matter from what port, either American or foreign, anchor at the quarantine station, and there remain until released by order of the board of health.

V. Vessels from infected or suspected ports, will, during the entire year, be required to discharge any and all ballast at the quarantine station, or such other place as may be designated by the health authorities, to have bilges and limbers cleaned and sweetened, and be subjected to at least one fumigation, and such other disinfection as may be necessary, and be detained at least five days.

VI. Vessels arriving with or without cargoes from suspected or infected latitudes, via American or foreign ports, shall be subjected to such fumigation as the maritime sanitation committee may deem necessary, said procedures to be charged for according to methods used.

VII. From May 1 to November 1, of each year, no cargo of fruit will be allowed in from any infected port.

Cargoes of fruit from perfectly healthy ports, but suspected latitudes, may be permitted up to the city in lighters, vessels to undergo maritime sanitation of detention, fumigation and disinfection.

VIII. Pilots must in each case, before boarding, make inquiry as to the sanitary condition of vessels in no case must they board if the vessel has had the diseases above enumerated in section one, on board, or has had same during voyage; in such cases they must direct to Sapelo quarantine station.

By order of the board of health.

HALL T. McGEE,

*Chairman Committee Maritime Sanitation.*

H. B. HORLBECK, M. D.,

*Health Officer and Secretary Board Health.*

R. LEBBY, M. D.,

*Quarantine Officer.*

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(b) Act Creating the Quarantine Commission.

No. 28.

IN THE SENATE, May 13, 1891.

*Resolved* (if the House of Representatives concur), That the Governor be and is hereby authorized to appoint four persons who shall, with the Governor of the Commonwealth, constitute a board of commissioners, whose duty it shall be to communicate with the proper authorities of the federal government or of any state, with a view of obtaining such concessions as will enable the board of health of the city of Philadelphia or the Commonwealth of Pennsylvania to secure a suitable site for a quar-

antine station at some point remote from the centers of population on the Delaware river. The commissioners shall also inquire into the feasibility of establishing a joint quarantine for the protection of all the ports on the Delaware river and bay, to be controlled by the several states bordering thereon. The commissioners shall report to the next legislature and shall receive no compensation for their services, but shall be allowed their necessary and actual expenses for traveling, stationery and clerk hire, provisions for which shall be made in the general appropriation bill.

Approved the 21st day of May, A. D. 1891.

ROBT. E. PATTISON.

(c) Appointment of Secretary Benjamin Lee, M. D., a Member of the Board of Commissioners to Secure a Suitable Site for a Quarantine Station on the Delaware River.

*June 24, 1891.*

BENJAMIN LEE, M. D., *1532 Pine Street, Philadelphia, Pa.:*

DEAR SIR: The Governor has appointed you a member of the board of commissioners to secure a suitable site for a quarantine station at some point on the Delaware river, and I accordingly herewith enclose your commission and a blank oath.

Very respectfully yours,

WM. F. HARRITY,  
*Secretary of the Commonwealth.*  
per G. H.

COMMONWEALTH OF PENNSYLVANIA,  
EXECUTIVE CHAMBER,  
HARRISBURG, *June 30, 1891.*

DR. BENJAMIN LEE, *Sixth and Sansom Streets, Philadelphia Pa.:*

MY DEAR DOCTOR: I am directed by Governor Pattison to inform you that the commission appointed under the concurrent resolution of the general assembly, approved May 21, 1891, to consider the question of the location of the quarantine station, will meet to-morrow, Wednesday, at three o'clock. Will you be kind enough to be present so that the commission may organize for attention to such duties as have been devolved upon it under the act of the general assembly above referred to.

Very respectfully yours,  
H. D. TATE,  
*Private Secretary.*

## (d) Philadelphia Lazaretto Station.

## MODES OF DISINFECTION.

*Disinfection of Ships.*

It should be the aim of a physician attached to a passenger ship, or the master of a vessel having no physician on board, to prevent the vessel from becoming infected when in an infected port, or when cases of infectious disease occur on board. This is to be accomplished by keeping the ship clean; by disinfecting suspected articles, and especially the soiled clothing of passengers before they are received on board; by the isolation of cases of infectious disease which occur on board; and by the thorough execution of disinfection usually recommended for the sick-room. When a case of cholera or of yellow fever occurs on a ship at sea, it cannot be taken as evidence that the vessel is infected unless at least five days have elapsed since the person attacked came on board. For he may have contracted the disease from exposure at the port of departure, or in some other locality on shore. When, however, a longer time than this has elapsed, or when several cases develop in a particular locality on shipboard, either simultaneously or successively, the vessel must be considered infected, unless it is shown that the cases are directly due to the opening of baggage containing infected clothing.

In practice, the sanitary officials at the port of arrival usually treat a vessel as infected if any cases of infectious disease have occurred upon her during the voyage. This is a safe general rule, which should not be departed from unless a considerable time—five to seven days—has elapsed since the cases occurred, and they can be clearly traced to exposure before coming on board. In this case, if the ship is clean and the precautions relating to disinfection and isolation of the sick have been faithfully executed, the health officer may be justified in dispensing with the general measures of disinfection which are required for an infected ship.

In the disinfection of ships, fumigation with sulphurous acid gas is a measure of prime importance. The fact that the ship may be almost hermetically closed, and the escape of gas to a great extent prevented, makes this method of disinfection more trustworthy than in the case of dwellings and hospitals. Disinfection by means of steam, especially of an iron vessel, is a difficult matter, but it would be well to fill the vessel with steam before introducing the sulphur dioxide, for the disinfecting power of this agent is much greater in presence of moisture.

An essential part of the disinfection of a ship will consist in the thorough cleansing of the bilge. The bilge water should be pumped out and replaced with clean water at least twice at each disinfection of the vessel. It is recommended that after such cleansing mercuric chloride be added to the clean water remaining in the bilge, in the proportion of one pound to the ton of water—estimated. In the case of ships sailing



from ports infected with yellow fever, it would be a wise precaution, after the cleansing of the bilge at the port of departure, to throw the same amount of mercuric chloride, dissolved in salt water, into the bilge, and to add a smaller quantity of the same solution at intervals during the voyage.

*Solution of Corrosive Sublimate—Very Poisonous.*

One drachm in one gallon of water (1 in 1,000 solution) should be used for sprinkling floors, decks and all wood-work and solid articles, avoiding metallic surfaces as far as possible; and for steeping clothing, bedding, etc., and for general disinfectant purposes. It may be applied to solid substances by sprinklers, brushes and mops.

Corrosive sublimate and its solution should be kept in bottles or jars labelled "Poison," and should always be under lock and key and in charge of a responsible person.

Articles of clothing or bedding, together with such furniture, pictures and ornaments that cannot be wetted without injury, should be fumigated. Destruction by fire is the best method, and must be resorted to where thorough disinfection is not practicable.

Corrosive sublimate solution should be used after sulphur fumigation, and be followed in about five hours by a thorough mechanical cleansing.

Corrosive sublimate solution is liable to decompose on standing. To prevent this, add a solution of equal strength of sal ammoniac.

Metallic vessels must not be used for corrosive sublimate solution.

*Sulphur Fumigation.*

Two pounds of sulphur will be required for every 1,000 cubic feet of space. The sulphur should be burned in open iron pots or shallow iron pans placed in water. A number of pots will be required as sulphur does not burn rapidly or completely in large masses. To obtain the maximum amount of available sulphurous acid gas the sulphur must be broken up into pieces not larger than a hazelnut. These should be thickly scattered on the bottom of the pots or pans, but not piled up. The sulphur should then be well moistened with methyl alcohol and ignited. In fumigating an apartment or the hold of a vessel, care should be taken to make it as air-tight as possible by pasting paper over all crevices. The apartment should now be left for twelve hours, then opened and well ventilated.

Additional protection from fire caused by the "spitting" of the molten sulphur can be secured by laying over the pots pieces of coarse wire gauze.

Dilute ammonia water will, in some cases completely, in other cases only partially, restore the colors of fabrics altered by the sulphurous acid gas.

To obviate the possible danger arising from breathing the fumes of

burning sulphur, place a cloth moistened with alcohol over the nose and mouth.

### *Boiling.*

Boiling for half an hour will destroy all known disease germs. This is the cheapest and best way of disinfecting clothing and bedding, which is not injured by the ordinary operations of the laundry.

### *Chloride of Lime.*

This is one of the cheapest and most efficient of disinfectants. Chloride of lime (chlorinated lime) owes its disinfectant power to the presence of hypo-chlorite of lime, a salt which is freely soluble in water, and which is quickly decomposed by contact with organic matter. Germs of all kinds, including the most resistant spores, are destroyed by this solution. (See circular on *Disinfection against Cholera*.)

### *Clothing, Bedding, etc.*

If it is impracticable to disinfect infected clothing and bedding *immediately* by boiling, it will be necessary to immerse it in a solution of mercuric chloride of the strength of 1 in 2,000, or in a two per cent. solution of chloride of lime. The first is preferable on account of the bleaching properties of chlorinated lime.

For outer clothing *steam* or *dry heat* is the best disinfectant. When the appliances for this mode of disinfection, which are expensive, are not at hand, *dry heat* and *sulphurous acid gas* may be safely substituted.

Objects made of leather, such as trunks, boots, etc., should be washed several times with weak disinfection solutions—*carbolic acid* two per cent., or chloride of lime one per cent.

Solid mattresses and beds should be burned, or their contents burned, and the covers washed in boiling water after treatment with a disinfectant solution.

*Carbolic acid* in two per cent. solution may be relied upon for disinfecting clothing, etc.

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## (e) Abstract of Sanitary Reports

### UNITED STATES.

#### *Reports of States, and Yearly and Monthly Reports of Cities.*

CALIFORNIA—*Los Angeles*.—Month of March, 1891. Population, 65,000. Total deaths, 71, including phthisis pulmonalis, 12; enteric fever, 1, and diphtheria, 1.

*Sacramento*.—Month of March, 1891. Population, 30,000. Total deaths, 49, including phthisis pulmonalis, 4; influenza, 2; enteric fever, 1; croup, 1, and whooping cough, 1.

COLORADO—*Denver*.—Month of March, 1891. Population, 106,670. Total deaths, 249, including phthisis pulmonalis, 44; enteric fever, 1; scarlet fever, 1; diphtheria, 8; measles, 4, and croup, 4.

FLORIDA—*Jacksonville*.—Month of March, 1891. Population, 17,160. Total deaths, 40, including phthisis pulmonalis, 11.

ILLINOIS—*Chicago*.—Month of March, 1891. Population, 1,099,133. Total deaths, 3,405, including phthisis pulmonalis, 231; influenza, 155; diphtheria, 80; enteric fever, 71; scarlet fever, 62; varicella, 2; measles, 39, and whooping cough, 24.

The health department reports 1,066 deaths from acute lung diseases during the month.

PEORIA.—Month of February, 1891. Population, 45,000. Total deaths, 61, including phthisis pulmonalis, 8; enteric fever, 1; diphtheria, 3, and croup, 6.

INDIANA—*Evansville*.—Month of March, 1891. Population, 50,600. Total deaths, 103, including phthisis pulmonalis, 13; influenza, 2; enteric fever, 10; scarlet fever, 2; diphtheria, 6, and croup 2.

IOWA.—Month of February, 1891. The following mortuary report is extracted from the *Monthly Bulletin* for March:

*Burlington*.—February. Consumption, 1; pneumonia, 4; cerebro-spinal meningitis, 1. Total deaths, 21. Population, 23,000. Death rate per 1,000, 0.93.

*Council Bluffs*.—No report.

*Davenport*.—February. Diphtheria, 5; consumption, 1; pneumonia, 1; meningitis, 1. Total deaths, 27. Population, 33,715. Death rate per 1,000, 0.52.

*Des Moines*.—February. Consumption, 5; pneumonia, 9; diphtheria, 6; membranous croup, 1; cerebro-spinal meningitis, 1; la grippe, 1. Total deaths, 48. Population, 53,000. Death rate per 1,000, 0.87.

*Dubuque*.—February. Tuberculosis, 5; pneumonia, 14; scarlet fever, 1; membranous croup, 3; meningitis, 2; measles, 1. Total deaths, 47. Population, 30,147. Death rate per 1,000, 0.64.

*Keokuk*.—February. Consumption, 2; pneumonia, 4; diphtheria, 1; membranous croup, 1; scarlet fever, 1. Total deaths, 28. Population, 14,500. Death rate per 1,000, 0.5.

*Muscataine*.—February. Pneumonia, 1; croup, 1. Total deaths, 14. Population, 11,432. Death rate per 1,000, 0.816.

*Ottumwa*.—No report.

*Sioux City*.—No report.

MARYLAND—*Baltimore*.—Month of March, 1891. Population, 434,439. Total deaths, 729, including phthisis pulmonalis, 94; enteric fever, 3; diphtheria, 21; influenza, 4; whooping cough, 10, and croup, 2.

MASSACHUSETTS—*Springfield*.—Month of March, 1891. Population, 44,164. Total deaths, 56, including phthisis pulmonalis, 3; influenza, 1; enteric fever, 2; measles, 1, and whooping cough, 1.

MICHIGAN.—Week ended April 4, 1891. Reports to the State Board of Health, Lansing, from fifty-two observers indicate that cholera-morbus, whooping cough and dysentery increased, and that cerebro-spinal meningitis, scarlet fever, typhoid fever and inflammation of brain decreased in area of prevalence.

Diphtheria was reported present during the week at twenty places, scarlet fever at thirty-one places, enteric fever at three places and measles at thirty-eight places.

*Grand Rapids*.—Month of March, 1891. Population, 85,000. Total deaths, 104, including phthisis pulmonalis, 7; enteric fever, 7; scarlet fever, 4; diphtheria, 9, and influenza, 1.

MINNESOTA—*Minneapolis*.—Month of March, 1891. Population, 164,738. Total deaths, 280, including phthisis pulmonalis, 27; influenza, 6; enteric fever, 4; scarlet fever, 1; diphtheria, 7; measles, 3, and whooping cough, 5.

*Winona*.—Month of March, 1891. Population, 19,000. Total deaths, 19, including phthisis, 4, and scarlet fever, 1.

MONTANA—*Butte City*.—Month of March, 1891. Population, 30,000. Total deaths, 77, including influenza, 12, and croup, 1.

NEW HAMPSHIRE—*Manchester*.—Month of March, 1891. Population, 44,900. Total deaths, 51, including phthisis pulmonalis, 2, and croup, 1.

NORTH CAROLINA.—Month of February, 1891. Reports from cities and towns having an aggregate population of 95,226 show a total of 96 deaths, including phthisis pulmonalis, 17, and measles, 2.

OHIO—*Cincinnati*.—Month of March, 1891. Population, 296,908. Total deaths, 576, including phthisis pulmonalis, 71; enteric fever, 15; scarlet fever, 3; influenza, 1; diphtheria, 16, and measles, 1.

PENNSYLVANIA—*Williamsport*.—Month of March, 1891. Population, 27,109. Total deaths, 28. No deaths reported from contagious diseases.

RHODE ISLAND—*Newport*.—Month of March, 1891. Population, 19,449. Total deaths, 37, including phthisis, 4.

TENNESSEE—*Chattanooga*.—Month of March, 1891. Population, 30,000. Total deaths, 49, including phthisis pulmonalis, 16; influenza, 1, and croup, 1.

*Memphis*.—Month of March, 1891. Population, 60,000. Total deaths, 122, including enteric fever, 2; influenza, 1; diphtheria, 2; phthisis pulmonalis, 25; scarlet fever, 2, and whooping cough, 1.



*Mortality Table, Cities of the United States.*

| CITIES.                      | Week ended. | Population, U. S.<br>Census of 1890. | Total deaths from<br>all causes. | DEATHS FROM—              |               |            |             |            |               |                |                |             |          |                    |    |
|------------------------------|-------------|--------------------------------------|----------------------------------|---------------------------|---------------|------------|-------------|------------|---------------|----------------|----------------|-------------|----------|--------------------|----|
|                              |             |                                      |                                  | Phthisis pul-<br>monalis. | Yellow fever. | Small-pox. | Variceloid. | Varicella. | Typhus fever. | Enteric fever. | Scarlet fever. | Diphtheria. | Measles. | Whooping<br>cough. |    |
| New York, N. Y., *           | April 11,   | 1,513,501                            | 1,216                            | 118                       |               |            |             |            |               | 1              | 2              | 35          | 30       | 18                 | 20 |
| Chicago, Ill., . . . . .     | April 4,    | 1,099,133                            | 960                              | 78                        |               |            |             |            |               |                | 19             | 12          | 17       | 11                 | 4  |
| Chicago, Ill., . . . . .     | April 11,   | 1,099,133                            | 781                              | 54                        |               |            |             |            |               |                | 25             | 12          | 12       | 11                 | 3  |
| Philadelphia, Pa., †         | April 11,   | 1,046,964                            | 435                              | 42                        |               |            |             |            |               |                | 20             | 8           | 8        |                    | 4  |
| Boston, Mass., . . . . .     | April 11,   | 448,477                              | 204                              | 26                        |               |            |             |            |               |                | 4              |             | 7        | 1                  | 3  |
| San Francisco, Cal., . . .   | April 4,    | 298,997                              | 125                              |                           |               |            |             |            |               |                | 4              |             | 9        |                    |    |
| Cincinnati, Ohio, . . . .    | April 10,   | 296,908                              | 131                              | 13                        |               |            |             |            |               |                | 4              | 1           | 2        |                    |    |
| Cleveland, Ohio, . . . .     | April 4,    | 261,546                              | 103                              | 11                        |               |            |             |            |               |                | 3              | 2           | 3        | 2                  | 1  |
| New Orleans, La., . . . .    | March 28,   | 241,995                              | 106                              | 10                        |               |            |             |            |               |                | 1              |             | 1        | 1                  |    |
| New Orleans, La., . . . .    | April 4,    | 241,995                              | 124                              | 14                        |               | 1          |             |            |               |                |                |             |          |                    |    |
| Washington, D. C., . . . .   | April 4,    | 230,392                              | 146                              | 20                        |               |            |             |            |               |                |                |             | 3        | 2                  | 1  |
| Washington, D. C., . . . .   | April 11,   | 230,392                              | 181                              | 19                        |               |            |             |            |               |                | 1              |             | 1        | 2                  | 2  |
| Detroit, Mich., . . . . .    | April 11,   | 205,669                              | 95                               | 5                         |               |            |             |            |               |                | 1              |             | 10       |                    |    |
| Milwaukee, Wis., . . . . .   | April 4,    | 204,150                              | 113                              | 6                         |               |            |             |            |               |                | 1              | 1           | 10       |                    | 2  |
| Milwaukee, Wis., . . . . .   | April 11,   | 204,150                              | 122                              | 11                        |               |            |             |            |               |                |                | 4           | 7        | 3                  | 2  |
| Minneapolis, Minn., . . .    | April 11,   | 164,738                              | 44                               |                           |               |            |             |            |               |                | 2              |             |          |                    |    |
| Louisville, Ky., . . . . .   | April 11,   | 161,005                              | 65                               | 9                         |               |            |             |            |               |                |                |             |          | 1                  |    |
| Rochester, N. Y., . . . . .  | April 11,   | 138,327                              | 46                               |                           |               |            |             |            |               |                |                |             | 1        | 1                  | 2  |
| Kansas City, Mo., . . . . .  | April 4,    | 132,416                              | 43                               | 5                         |               |            |             |            |               |                |                | 1           |          |                    |    |
| Kansas City, Mo., . . . . .  | April 11,   | 132,416                              | 48                               | 4                         |               | 1          |             |            |               |                |                |             | 1        |                    |    |
| Providence, R. I., . . . . . | April 11,   | 132,043                              | 42                               |                           |               |            |             |            |               |                |                |             |          |                    |    |
| Indianapolis, Ind., . . . .  | April 8,    | 107,445                              | 33                               | 5                         |               |            |             |            |               |                | 1              | 1           |          |                    | 2  |
| Indianapolis, Ind., . . . .  | April 10,   | 107,445                              | 47                               | 8                         |               |            |             |            |               |                |                |             | 2        | 1                  |    |
| Toledo, Ohio, . . . . .      | April 10,   | 82,652                               | 24                               | 2                         |               |            |             |            |               |                |                |             | 1        |                    |    |
| Richmond, Va., . . . . .     | April 11,   | 80,898                               | 51                               | 6                         |               |            |             |            |               |                |                |             |          |                    |    |
| Nashville, Tenn., . . . . .  | April 11,   | 76,309                               | 39                               |                           |               |            |             |            |               |                |                |             |          |                    | 1  |
| Lynn, Mass., . . . . .       | April 11,   |                                      | 19                               | 1                         |               |            |             |            |               |                |                | 1           |          |                    |    |
| Portland, Me., . . . . .     | April 11,   | 36,608                               |                                  |                           |               |            |             |            |               |                | 1              |             |          |                    |    |
| Mobile, Ala., . . . . .      | April 4,    |                                      | 12                               | 3                         |               |            |             |            |               |                |                |             |          |                    |    |
| Mobile, Ala., . . . . .      | April 11,   |                                      | 17                               | 3                         |               |            |             |            |               |                |                |             |          |                    |    |
| Altoona, Pa., . . . . .      | March 21,   | 30,269                               | 13                               |                           |               |            |             |            |               |                | 2              |             |          |                    |    |
| Altoona, Pa., . . . . .      | March 28,   | 30,269                               | 12                               |                           |               |            |             |            |               |                |                |             |          |                    |    |
| Galveston, Tex., . . . . .   | March 27,   | 29,118                               | 12                               |                           |               |            |             |            |               |                |                |             |          | 1                  |    |
| Galveston, Tex., . . . . .   | April 3,    | 29,118                               | 13                               | 1                         |               |            |             |            |               |                |                |             |          |                    |    |
| Newport, R. I., . . . . .    | April 9,    | 19,449                               |                                  | 2                         |               |            |             |            |               |                |                |             |          |                    |    |
| San Diego, Cal., . . . . .   | April 4,    | 16,153                               | 3                                |                           |               |            |             |            |               |                |                |             |          |                    |    |
| Pensacola, Fla., . . . . .   | April 4,    | 11,751                               | 3                                |                           |               |            |             |            |               |                |                |             |          |                    |    |

\* One hundred and eight deaths from influenza and 299 from pneumonia were reported for this week.

† The health officer reports 3 cases of small-pox since the *Helmsley* left Philadelphia.

*Table of Temperature and Rainfall, week ended April 10, 1891.*

[Received from War Department, Signal Office.]

| LOCALITY.                         | MEAN TEMPERATURE IN DEGREES FAHRENHEIT. |         |             | RAINFALL IN INCHES AND HUNDREDTHS. |         |             |
|-----------------------------------|-----------------------------------------|---------|-------------|------------------------------------|---------|-------------|
|                                   | Normal.                                 | Excess. | Deficiency. | Normal.                            | Excess. | Deficiency. |
| <b>New England States:</b>        |                                         |         |             |                                    |         |             |
| Eastport, Me., . . . . .          | 38                                      | 14      | .....       | .80                                | .....   | .80         |
| Portland, Me., . . . . .          | 38                                      | .....   | 14          | .70                                | .....   | .70         |
| Boston, Mass., . . . . .          | 42                                      | .....   | 28          | .91                                | .....   | .90         |
| Block Island, R.I., . . . . .     | 41                                      | .....   | 14          | .70                                | .....   | .70         |
| <b>Middle Atlantic States:</b>    |                                         |         |             |                                    |         |             |
| Albany, N. Y., . . . . .          | 43                                      | .....   | 42          | .63                                | .....   | .60         |
| New York, N. Y., . . . . .        | 46                                      | .....   | 42          | .84                                | .....   | .80         |
| Philadelphia, Pa., . . . . .      | 47                                      | .....   | 42          | .70                                | .....   | .70         |
| Atlantic City, N. J., . . . . .   | 44                                      | .....   | 28          | .84                                | .....   | .80         |
| Baltimore, Md., . . . . .         | 50                                      | .....   | 56          | .77                                | .....   | .70         |
| Washington, D. C., . . . . .      | 50                                      | .....   | 00          | .76                                | .....   | .74         |
| Lynchburg, Va., . . . . .         | 53                                      | .....   | 70          | .82                                | .....   | .80         |
| Norfolk, Va., . . . . .           | 53                                      | .....   | 56          | .98                                | .....   | .70         |
| <b>South Atlantic States:</b>     |                                         |         |             |                                    |         |             |
| Charlotte, N. C., . . . . .       | 57                                      | .....   | 60          | .88                                | .06     | .....       |
| Wilmington, N. C., . . . . .      | 59                                      | .....   | 56          | .80                                | .....   | .80         |
| Charleston, S. C., . . . . .      | 62                                      | .....   | 42          | .98                                | .....   | .90         |
| Augusta, Ga., . . . . .           | 62                                      | .....   | 56          | .95                                | .....   | .90         |
| Savannah, Ga., . . . . .          | 64                                      | .....   | 56          | .98                                | .....   | 1.00        |
| Jacksonville, Fla., . . . . .     | 67                                      | .....   | 70          | .70                                | .....   | .70         |
| Key West, Fla., . . . . .         | 75                                      | .....   | 56          | .24                                | .....   | .20         |
| <b>Gulf States:</b>               |                                         |         |             |                                    |         |             |
| Atlanta, Ga., . . . . .           | 69                                      | .....   | 56          | .95                                | .....   | .90         |
| Pensacola, Fla., . . . . .        | 66                                      | .....   | 70          | 1.00                               | .20     | .....       |
| Mobile, Ala., . . . . .           | 65                                      | .....   | 70          | 1.42                               | .....   | .80         |
| Montgomery, Ala., . . . . .       | 63                                      | .....   | 56          | 1.33                               | .....   | 1.00        |
| Vicksburg, Miss., . . . . .       | 64                                      | .....   | 42          | 1.54                               | .....   | .90         |
| New Orleans, La., . . . . .       | 68                                      | .....   | 56          | 1.26                               | .....   | 1.20        |
| Shreveport, La., . . . . .        | 65                                      | .....   | 42          | 1.05                               | .....   | 1.00        |
| Fort Smith, Ark., . . . . .       | 60                                      | .....   | 28          | 1.17                               | .....   | .80         |
| Little Rock, Ark., . . . . .      | 60                                      | .....   | 28          | 1.12                               | .....   | .90         |
| Palestine, Tex., . . . . .        | 65                                      | .....   | 24          | .91                                | .10     | .....       |
| Galveston, Tex., . . . . .        | 68                                      | .....   | 25          | .70                                | .....   | .60         |
| San Antonio, Tex., . . . . .      | 68                                      | .....   | 14          | .77                                | .....   | .70         |
| Corpus Christi, Tex., . . . . .   | 68                                      | .....   | 35          | .28                                | .....   | .27         |
| Brownsville, Tex., . . . . .      | 72                                      | .....   | .....       | .28                                | .....   | .....       |
| Rio Grande City, Tex., . . . . .  | 75                                      | .....   | 42          | .28                                | .....   | .30         |
| <b>Ohio Valley and Tennessee:</b> |                                         |         |             |                                    |         |             |
| Memphis, Tenn., . . . . .         | 60                                      | .....   | 28          | 1.33                               | .....   | .90         |
| Nashville, Tenn., . . . . .       | 57                                      | .....   | 42          | 1.19                               | .....   | .60         |
| Chattanooga, Tenn., . . . . .     | 58                                      | .....   | 56          | 1.14                               | .....   | .20         |
| Knoxville, Tenn., . . . . .       | 56                                      | .....   | 56          | 1.28                               | .....   | 1.10        |
| Louisville, Ky., . . . . .        | 54                                      | .....   | 42          | 1.00                               | .....   | .40         |
| Indianapolis, Ind., . . . . .     | 49                                      | .....   | 43          | .84                                | .90     | .....       |
| Cincinnati, Ohio, . . . . .       | 50                                      | .....   | 56          | .75                                | .....   | .20         |
| Columbus, Ohio, . . . . .         | 47                                      | .....   | 50          | .57                                | .....   | .....       |
| Pittsburg, Pa., . . . . .         | 47                                      | .....   | 56          | .67                                | .....   | .02         |
| <b>Lake Region:</b>               |                                         |         |             |                                    |         |             |
| Oswego, N. Y., . . . . .          | 38                                      | .....   | 42          | .49                                | .....   | .42         |
| Rochester, N. Y., . . . . .       | 39                                      | .....   | 28          | .63                                | .....   | .....       |
| Buffalo, N. Y., . . . . .         | 38                                      | .....   | 40          | .56                                | .....   | .10         |
| Erie, Pa., . . . . .              | 40                                      | .....   | 42          | .56                                | .....   | .30         |
| Cleveland, Ohio, . . . . .        | 41                                      | .....   | 42          | .70                                | .....   | .20         |
| Sandusky, Ohio, . . . . .         | 42                                      | .....   | 42          | .56                                | .....   | .20         |
| Toledo, Ohio, . . . . .           | 43                                      | .....   | 42          | .44                                | .....   | .....       |
| Detroit, Mich., . . . . .         | 42                                      | .....   | 50          | .49                                | .....   | .10         |
| Port Huron, Mich., . . . . .      | 37                                      | .....   | 30          | .45                                | .....   | .10         |
| Alpena, Mich., . . . . .          | 33                                      | .....   | 28          | .49                                | .....   | .40         |
| Marquette, Mich., . . . . .       | 33                                      | .....   | 42          | .47                                | .....   | .10         |
| Grand Haven, Mich., . . . . .     | 40                                      | .....   | 42          | .56                                | .....   | .....       |
| Milwaukee, Wis., . . . . .        | 43                                      | .....   | 42          | .56                                | 1.80    | .....       |
| Chicago, Ill., . . . . .          | 44                                      | .....   | 70          | .70                                | .90     | .....       |
| Duluth, Minn., . . . . .          | 34                                      | .....   | 14          | .45                                | .....   | .10         |
| <b>Upper Mississippi Valley:</b>  |                                         |         |             |                                    |         |             |
| St. Paul, Minn., . . . . .        | 41                                      | .....   | 28          | .49                                | .50     | .....       |
| La Crosse, Wis., . . . . .        | 43                                      | .....   | 42          | .42                                | .20     | .....       |
| Dubuque, Iowa, . . . . .          | 45                                      | .....   | 56          | .49                                | .10     | .....       |
| Davenport, Iowa, . . . . .        | 46                                      | .....   | 56          | .56                                | .40     | .....       |
| Des Moines, Iowa, . . . . .       | 46                                      | .....   | 42          | .43                                | .20     | .....       |
| Keokuk, Iowa, . . . . .           | 48                                      | .....   | 56          | .60                                | .10     | .....       |
| Springfield, Ill., . . . . .      | 50                                      | .....   | 42          | .55                                | .80     | .....       |
| Cairo, Ill., . . . . .            | 56                                      | .....   | 28          | .91                                | .....   | .80         |
| St. Louis, Mo., . . . . .         | 53                                      | .....   | 28          | .77                                | .....   | .40         |
| <b>Missouri Valley:</b>           |                                         |         |             |                                    |         |             |
| Springfield, Mo., . . . . .       | 54                                      | .....   | 40          | .83                                | .20     | .....       |
| Kansas City, Mo., . . . . .       | 51                                      | .....   | 28          | .65                                | .....   | .....       |
| Concordia, Kans., . . . . .       | 49                                      | .....   | 6           | .70                                | .....   | .70         |
| Omaha, Nebr., . . . . .           | 45                                      | .....   | 42          | .68                                | .....   | .70         |
| Valentine, Nebr., . . . . .       | 43                                      | .....   | 28          | .41                                | .....   | .80         |
| Huron, S. D., . . . . .           | 42                                      | .....   | 14          | .40                                | .20     | .....       |
| Sully, Fort, S. D., . . . . .     | 43                                      | .....   | 14          | .40                                | .20     | .....       |

*Table of Temperature and Rainfall—Continued.*

| LOCALITY.                        | MEAN TEMPERATURE IN DEGREES FAHRENHEIT. |         |             | RAINFALL IN INCHES AND HUNDREDTHS. |         |             |
|----------------------------------|-----------------------------------------|---------|-------------|------------------------------------|---------|-------------|
|                                  | Normal.                                 | Excess. | Deficiency. | Normal.                            | Excess. | Deficiency. |
| Extreme Northwest:               |                                         |         |             |                                    |         |             |
| Moorehead, Minn., . . . . .      | 85                                      | 28      | .....       | .43                                | .10     | .....       |
| Bismarck, N. D., . . . . .       | 87                                      | 28      | .....       | .49                                | .10     | .....       |
| Buford, Fort, N. D., . . . . .   | 88                                      | 45      | .....       | .21                                | .27     | .....       |
| Rocky Mountain Slope:            |                                         |         |             |                                    |         |             |
| Assiniboine, Fort, Mont., . . .  | 41                                      | 42      | .....       | .19                                | .....   | .10         |
| Helena, Mont., . . . . .         | 42                                      | 14      | .....       | .26                                | .....   | .30         |
| Custer, Fort, Mont., . . . . .   | 44                                      | 14      | .....       | .21                                | .....   | .20         |
| Salt Lake City, Utah., . . . . . | 48                                      | .....   | 14          | .56                                | .....   | .20         |
| Cheyenne, Wyo., . . . . .        | 41                                      | .....   | .....       | .31                                | .....   | .30         |
| North Platte, Nebr., . . . . .   | 46                                      | .....   | 28          | .40                                | .....   | .40         |
| Denver, Colo., . . . . .         | 46                                      | .....   | 21          | .42                                | .....   | .42         |
| Montrose, Colo., . . . . .       | 47                                      | .....   | 48          | .33                                | .....   | .30         |
| Pueblo, Colo., . . . . .         | 48                                      | .....   | 14          | .38                                | .....   | .40         |
| Dodge City, Kans., . . . . .     | 51                                      | .....   | 14          | .22                                | .....   | .20         |
| Sill, Fort, Ind. T., . . . . .   | 60                                      | .....   | 28          | .56                                | .....   | .50         |
| Santa Fe, N. Mex., . . . . .     | 46                                      | .....   | 28          | .21                                | .....   | .30         |
| Pacific Coast:                   |                                         |         |             |                                    |         |             |
| Olympia, Wash., . . . . .        | 48                                      | .....   | .....       | .84                                | .60     | .....       |
| Portland, Oreg., . . . . .       | 52                                      | .....   | .....       | .83                                | .30     | .....       |
| Roseburg, Oreg., . . . . .       | 51                                      | .....   | 14          | .63                                | .10     | .....       |
| Red Bluff, Cal., . . . . .       | 59                                      | .....   | 42          | .63                                | .70     | .....       |
| Sacramento, Cal., . . . . .      | 58                                      | .....   | 14          | .70                                | .40     | .....       |
| San Francisco, Cal., . . . . .   | 55                                      | .....   | .....       | .58                                | 1.10    | .....       |
| Los Angeles, Cal., . . . . .     | 53                                      | .....   | .....       | .48                                | .....   | .10         |
| San Diego, Cal., . . . . .       | 58                                      | .....   | .....       | .21                                | .....   | .....       |
| Yuma, Ariz., . . . . .           | 69                                      | .....   | .....       | .....                              | .....   | .....       |

## FOREIGN.

[Reports received through the Department of State and other channels.]

*Sanitary commission at Constantinople—Report of United States commissioner—Rumors of cholera in Syria and of plague in the Assy—Report No. 19.*

The news received until the day before yesterday from the provinces where cholera has raged was good; but just yesterday, the 16th inst, the sanitary physician at Aleppo sent a telegram by which he announces that, at Guok-see and at Guesech near Marash, in Syria, fifteen deaths, have been registered, they say, from cholera. But the M. D. states that he presumes, by the symptoms presented by the dead that it really was a question of typhoid fever. They will inquire into the facts, and I hope I will be able to present a report on the question.

The sanitary physician at Zeddah gives notice of the outbreak of an epidemic in the Assy, at Beni-sheir, and at Ebha.

The Assy is far distant from Zeddah, and, besides that, is a place where a foreigner could not dare to travel without danger; consequently we cannot have precise news and be aware of the symptoms of this disease. Still it is said that there is bleeding of the nose, spitting of blood, discharges of blood, but without bubo. I notice *that* because it, is believed to be a question of plague. We will see what it really is.

In the capital the prevailing diseases are those of the respiratory apparatus, as inflammation of the lungs and whooping cough, especially

in children. Small-pox exists always. Besides that there is influenza and several cases of typhoid fever which proved fatal.

S. C. ZAVITZIANO.

CONSTANTINOPLE, *March 19, 1891*

BRAZIL—*Ceara*.—Month of February, 1891. Population, 35,065. Total deaths 95. No deaths from contagious diseases.

*Rio de Janeiro*—*Yellow fever epidemic*.—Under date of March 9, 1891, the United States sanitary inspector, Dr. R. Cleary, writes as follows:

The following is my weekly report for the week ended March 7, 1891: Population, 450,000. Total deaths, 511, including yellow fever, 181; small-pox, 8; phthisis pulmonalis, 42; enteric fever, 9; measles, 1; and whooping-cough, 1.

In spite of the rain and cooler weather, the yellow fever has increased and is increasing. The hospitals being overcrowded, the minister of the interior, on the 3d instant, issued an order to the inspector of public health to *permit all* the hospitals to receive the sick of this disease, with due precaution as to isolation and disinfection, and to provide additional temporary arrangements for the indigent sick. The United States consul general, with a due regard to the public health of his own country, puts all vessels in quarantine that leave this port for the United States. The greatest number of deaths in one day from this disease was thirty-three, on the 4th of March; yet, withal, the epidemic is not extraordinary for this port. The authorities appear to be more than usually active in enforcing health regulations, inspecting vessels, and in putting in quarantine those that are infected. I repeat, that every vessel arriving in American ports from this place should be subjected to a rigorous examination and disinfection until the epidemic shall have declined.

The port health inspectors are not idle, and during the past week they inspected thirty-seven vessels in this port, of which seven were found to have cases of yellow fever aboard, and were sent to the quarantine ground and thoroughly disinfected, and the sick remanded to the hospitals. This inspection is daily.

CUBA—*Havana*.—Month of March, 1891. The United States Sanitary inspector reports 560 deaths in the city during the month, including yellow fever, 4; enteric fever, 13; so-called pernicious fever, 12; paludal fever, 2; bilious fever, 1; small-pox, 2; diphtheria and croup, 23; measles, 3, and glanders, 1.

FRANCE—*Nice*.—Month of February, 1891. Population, 78,482. Total deaths, 231, including phthisis pulmonalis, 10; enteric fever, 1; small-pox, 1; diphtheria, 1; measles, 5, and whooping-cough, 1.

GERMANY—*Cologne*.—Month of February, 1891. Population, 282,335. Total deaths, 534, including typhus fever, 1; scarlet fever, 2; diphtheria and croup, 28; measles, 5, and whooping cough, 17.

GREAT BRITAIN—*England and Wales*.—The deaths registered in twenty-eight great towns of England and Wales, during the week ended



March 28 corresponded to an annual rate of 21.2 a thousand of the aggregate population, which is estimated at 9,715,559. The lowest rate was recorded in Derby, viz., 14.1, and the highest in Huddersfield, viz., 34.6 a thousand. Diphtheria caused four deaths in Salford.

*London.*—One thousand six hundred and sixty-seven deaths were registered during the week, including measles, 32; scarlet fever, 12; diphtheria, 26; whooping-cough, 48; enteric fever, 8, and diarrhoea and dysentery, 9. The deaths from all causes corresponded to an annual rate of 19.3 a thousand. Diseases of the respiratory organs caused 466 deaths. In greater London 2,066 deaths were registered, corresponding to an annual rate of 18.3 a thousand of the population. In the "outer ring" the deaths included measles, 10; whooping-cough, 14, and diphtheria, 7.

*Newcastle-upon-Tyne.*—Two weeks ended March 21, 1891. Population, 145,356. Total number of deaths, 5, including scarlet fever, 1, and diphtheria, 4.

*Ireland.*—The average annual death rate, represented by the deaths registered during the week ended March 28, in the sixteen principal town districts of Ireland, was 26.6 a thousand of the population. The lowest rate was recorded in Newry, viz., 7.0, and the highest in Cork, viz., 34.4 a thousand. In Dublin and suburbs 197 deaths were registered, including enteric fever, 3, and whooping-cough, 3.

*Scotland.*—The deaths registered in eight principal towns during the week ended March 28 corresponded to an annual rate of 26.7 a thousand of the population, which is estimated at 1,345,563. The lowest mortality was recorded in Leith, viz., 14.8, and the highest in Paisley, viz., 33.1 a thousand. The aggregate number of deaths registered from all causes was 698, including measles, 36; scarlet fever, 7; diphtheria, 5; whooping-cough, 34; fever, 3, and diarrhoea, 8.

*INDIA—Calcutta—Cholera.*—Week ended February 7, 1891. Population, 433,219. Total deaths, 321, including 57 from cholera.

*ITALY.*—Year of 1890. The United States consul general reports 13,170 deaths from small-pox, 20,884 from enteric fever, 31,757 from phthisis pulmonalis, 6,426 from scarlet fever, 18,310 from diphtheria, and 13,839 from measles during the year.

*NETHERLANDS.*—Month of December, 1890. Reports from the twelve principal cities, having an aggregate population of 928,905, show a total of 1,112 deaths, including typhus and enteric fevers, 9; scarlet fever, 3; measles, 81; croup, 20, and whooping-cough, 48.

Mortality Table—Foreign Cities.

| CITIES.                      | Week ended | Estimated population. | Total deaths from all causes. | DEATHS FROM— |               |            |               |                |                |             |          |                 |  |
|------------------------------|------------|-----------------------|-------------------------------|--------------|---------------|------------|---------------|----------------|----------------|-------------|----------|-----------------|--|
|                              |            |                       |                               | Cholera.     | Yellow fever. | Small-pox. | Typhus fever. | Enteric fever. | Scarlet fever. | Diphtheria. | Measles. | Whooping-cough. |  |
| London.                      | Mar. 21.   | 5,877,390             | 2,199                         |              |               |            |               | 13             | 9              | 40          | 53       | 67              |  |
| Hamburg.                     | Mar. 14.   | 570,534               | 290                           |              |               |            |               | 5              | 8              | 8           |          |                 |  |
| Buda Pesth.                  | Mar. 26.   | 507,000               |                               |              |               |            |               | 1              | 1              | 1           |          |                 |  |
| Brussels.                    | Mar. 21.   | 469,459               | 236                           |              |               |            |               | 6              | 1              | 1           |          |                 |  |
| Warsaw.                      | Mar. 7.    | 455,852               | 202                           |              | 15            |            |               | 4              | 3              | 3           |          |                 |  |
| Warsaw.                      | Mar. 14.   | 455,852               | 188                           |              | 2             |            |               | 1              | 6              | 5           |          |                 |  |
| Amsterdam.                   | Feb. 28.   | 417,542               | 240                           |              |               |            |               | 1              |                | 9           |          |                 |  |
| Amsterdam.                   | Mar. 7.    | 417,542               | 227                           |              |               |            |               | 1              |                | 3           |          |                 |  |
| Lyons.                       | Mar. 7.    | 401,390               | 227                           |              |               |            |               | 1              |                | 3           |          |                 |  |
| Lyons.                       | Mar. 21.   | 401,390               | 205                           |              |               |            |               | 3              |                | 7           |          |                 |  |
| Leipzig.                     | Mar. 7.    | 360,671               | 134                           |              |               |            |               |                |                | 1           |          |                 |  |
| Copenhagen.                  | Mar. 21.   | 312,387               | 118                           |              |               |            |               |                | 1              | 2           |          |                 |  |
| Odessa.                      | Mar. 14.   | 295,000               | 121                           |              |               |            |               | 1              | 1              | 1           |          |                 |  |
| Edinburgh.                   | Mar. 14.   | 275,436               | 118                           |              |               |            |               | 1              | 1              | 1           |          |                 |  |
| Antwerp.                     | Mar. 21.   | 238,788               | 96                            |              |               |            |               | 2              |                |             |          |                 |  |
| Bristol.                     | Mar. 14.   | 235,171               | 114                           |              |               |            |               | 2              |                |             |          |                 |  |
| Prague.                      | Mar. 7.    | 183,085               | 116                           |              |               |            |               |                |                |             |          |                 |  |
| Königsberg.                  | Mar. 8.    | 161,200               | 14                            |              |               |            |               |                |                |             |          |                 |  |
| Ghent.                       | Mar. 7.    | 153,740               | 90                            |              |               |            |               | 1              | 2              |             |          |                 |  |
| Elberfeld.                   | Mar. 21.   | 128,850               | 59                            |              |               |            |               |                |                |             | 3        | 3               |  |
| Danzig.                      | Mar. 7.    | 119,000               | 76                            |              |               |            |               |                | 1              | 4           |          |                 |  |
| Barmen.                      | Mar. 21.   | 116,248               | 56                            |              |               |            |               |                |                | 2           |          |                 |  |
| Barmen.                      | Mar. 14.   | 116,248               | 37                            |              |               |            |               |                |                | 2           |          | 2               |  |
| Stettin.                     | Mar. 7.    | 116,000               | 56                            |              |               |            |               | 4              |                | 1           |          |                 |  |
| Havre.                       | Mar. 7.    | 112,074               | 56                            |              |               |            |               |                |                |             |          |                 |  |
| Havre.                       | Mar. 21.   | 112,074               | 62                            |              |               |            |               | 1              |                |             |          |                 |  |
| Catania.                     | Mar. 22.   | 110,000               | 41                            |              |               |            |               |                | 1              |             |          |                 |  |
| Crefeld.                     | Mar. 29.   | 108,000               | 73                            |              |               |            |               |                |                | 1           |          |                 |  |
| Zürichburg.                  | Mar. 21.   | 101,246               | 41                            |              |               |            |               |                |                |             |          |                 |  |
| Zürich.                      | Mar. 21.   | 91,323                | 34                            |              |               |            |               |                |                |             |          |                 |  |
| Leith.                       | Mar. 14.   | 80,736                | 28                            |              |               |            |               |                | 3              | 12          | 4        | 9               |  |
| Mannheim.                    | Mar. 21.   | 80,000                | 35                            |              |               |            |               |                |                | 1           |          |                 |  |
| Mayence.                     | Mar. 7.    | 73,271                | 36                            |              |               |            |               |                |                | 4           |          |                 |  |
| Mayence.                     | Mar. 14.   | 73,271                | 29                            |              |               |            |               |                |                | 3           |          |                 |  |
| Merida.                      | Feb. 23.   | 47,400                | 36                            |              |               |            |               |                |                | 2           |          |                 |  |
| Merida.                      | Mar. 2.    | 47,400                | 41                            |              |               |            |               |                |                | 1           |          |                 |  |
| Merida.                      | Mar. 9.    | 47,400                | 31                            |              |               |            |               |                |                |             |          |                 |  |
| Cardenas.                    | Mar. 16.   | 47,400                | 44                            |              |               |            |               |                |                |             |          |                 |  |
| Vera Cruz.                   | Mar. 16.   | 25,000                | 9                             |              |               |            |               |                |                |             |          |                 |  |
| Victoria.                    | Apr. 2.    | 23,800                | 22                            |              |               |            |               | 1              |                |             |          |                 |  |
| Victoria.                    | Mar. 14.   | 20,000                | 7                             |              |               |            |               |                |                |             |          |                 |  |
| Victoria.                    | Mar. 28.   | 20,000                | 8                             |              |               |            |               |                |                |             |          |                 |  |
| Kingston.                    | Mar. 20.   | 18,264                | 6                             |              |               |            |               |                |                |             |          |                 |  |
| Cartagena.                   | Mar. 7.    | 16,000                | 8                             |              |               |            |               |                |                |             |          |                 |  |
| Cartagena.                   | Mar. 14.   | 16,000                | 2                             |              |               |            |               |                |                |             |          |                 |  |
| Cartagena.                   | Mar. 21.   | 16,000                | 9                             |              |               |            |               |                |                |             |          |                 |  |
| Rio Grande do Sul.           | Jan. 31.   | 16,000                | 19                            |              |               |            |               | 2              |                |             |          |                 |  |
| Rio Grande do Sul.           | Feb. 7.    | 16,000                | 30                            |              |               |            |               | 2              |                |             |          |                 |  |
| Sagua la Grande.             | Mar. 14.   | 15,605                | 19                            |              |               |            |               |                |                |             |          |                 |  |
| Kingston, Can.               | Apr. 3.    | 13,172                | 8                             |              |               |            |               |                |                |             |          |                 |  |
| Cape Haytien.                | Jan. 31.   | 15,000                | 8                             |              |               |            |               |                |                |             |          |                 |  |
| Cape Haytien.                | Feb. 7.    | 15,000                | 10                            |              |               |            |               |                |                |             |          |                 |  |
| Cape Haytien.                | Feb. 14.   | 15,000                | 7                             |              |               |            |               |                |                |             |          |                 |  |
| Cape Haytien.                | Feb. 21.   | 15,000                | 7                             |              |               |            |               |                |                |             |          |                 |  |
| Cape Haytien.                | Feb. 28.   | 15,000                | 10                            |              |               |            |               |                |                |             |          |                 |  |
| St. Thomas, W. I.            | Feb. 27.   | 12,019                | 41                            |              |               |            |               |                |                |             |          |                 |  |
| St. Thomas, W. I.            | Mar. 6.    | 12,019                | 40                            |              |               |            |               |                |                |             |          |                 |  |
| St. Thomas, W. I.            | Mar. 13.   | 12,019                | 44                            |              |               |            |               |                |                |             |          |                 |  |
| Sonneberg.                   | Mar. 7.    | 11,600                | 3                             |              |               |            |               |                |                | 1           |          |                 |  |
| Port Stanley and St. Thomas. | Mar. 4.    | 11,000                | 5                             |              |               |            |               |                |                |             |          |                 |  |
| Port Stanley and St. Thomas. | Mar. 11.   | 11,000                | 3                             |              |               |            |               |                |                |             |          |                 |  |
| Port Stanley and St. Thomas. | Mar. 18.   | 11,000                | 4                             |              |               |            |               |                |                |             |          |                 |  |
| Port Stanley and St. Thomas. | Mar. 25.   | 11,000                | 3                             |              |               |            |               |                | 1              |             |          |                 |  |
| Queenstown.                  | Mar. 28.   | 10,340                | 4                             |              |               |            |               |                |                |             |          |                 |  |
| Guelph.                      | Mar. 22.   | 10,173                | 1                             |              |               |            |               |                |                |             |          |                 |  |
| Guelph.                      | Apr. 5.    | 10,173                | 1                             |              |               |            |               |                |                |             |          |                 |  |
| Tuxpan.                      | Mar. 28.   | 9,000                 | 8                             |              |               |            |               | 1              |                |             |          | 2               |  |
| Chatham.                     | Mar. 21.   | 8,730                 | 4                             |              |               |            |               |                | 2              |             |          |                 |  |
| Chatham.                     | Apr. 4.    | 8,730                 | 2                             |              |               |            |               |                |                |             |          |                 |  |
| Sarnia.                      | Mar. 21.   | 6,200                 | 1                             |              |               |            |               |                |                |             |          |                 |  |
| Sarnia.                      | Apr. 4.    | 6,200                 | 1                             |              |               |            |               |                |                |             |          |                 |  |
| Helena.                      | Feb. 28.   | 4,500                 | 1                             |              |               |            |               |                |                |             |          |                 |  |
| Coaticook.                   | Mar. 21.   | 3,800                 | 1                             |              |               |            |               |                |                |             |          |                 |  |
| Santiago.                    | Feb. 21.   | 3,500                 | 4                             |              |               |            |               |                |                |             |          |                 |  |
| Amberstburg.                 | Mar. 31.   | 3,100                 | 4                             |              |               |            |               |                |                |             |          |                 |  |
| Rutaritari.                  | Jan. 10.   | 3,000                 | 1                             |              |               |            |               |                |                |             |          |                 |  |

*Mortality Table—Foreign Cities—Continued.*

| CITIES.                       | Week ended | Estimated population. | Total deaths from all causes. | DEATHS FROM— |               |            |               |                |                |             |          |
|-------------------------------|------------|-----------------------|-------------------------------|--------------|---------------|------------|---------------|----------------|----------------|-------------|----------|
|                               |            |                       |                               | Cholera.     | Yellow fever. | Small-pox. | Typhus fever. | Enteric fever. | Scarlet fever. | Diphtheria. | Measles. |
| Butaritari, . . . . .         | Jan. 24,   | 3,000                 | 1                             | .            | .             | .          | .             | .              | .              | .           | .        |
| Butaritari, . . . . .         | Jan. 31,   | 3,000                 | 2                             | .            | .             | .          | .             | .              | .              | .           | .        |
| Butaritari, . . . . .         | Feb. 7,    | 3,000                 | 2                             | .            | .             | .          | .             | .              | .              | .           | .        |
| Livingston, . . . . .         | Apr. 1,    | 3,000                 | 2                             | .            | .             | .          | .             | .              | .              | .           | .        |
| Prescott, . . . . .           | Mar. 19,   | 2,988                 | 1                             | .            | .             | .          | .             | .              | .              | .           | .        |
| Prescott, . . . . .           | Mar. 26,   | 2,988                 | 1                             | .            | .             | .          | .             | .              | .              | .           | .        |
| Prescott, . . . . .           | Apr. 2,    | 2,988                 | 1                             | .            | .             | .          | .             | .              | .              | .           | .        |
| San Juan del Norte, . . . . . | Jan. 28,   | 1,025                 | 1                             | .            | .             | .          | .             | 1              | .              | .           | .        |
| Waubashene, . . . . .         | Apr. 4,    | 1,000                 | 1                             | .            | .             | .          | .             | .              | .              | .           | .        |

(f) Resolution in Regard to the Importation of Spanish Rags Forwarded to the Boards of Health of Philadelphia, Pittsburg, Chester and Erie.

*Resolved*, That the State Board of Health of Pennsylvania recommends to the health authorities of all ports of entry in the commonwealth the adoption of a regulation forbidding, for a period of one year from the present time, the importation of rags from any Spanish port, or of rags which there is good reason to suppose have been collected in Spain.

The resolution was also forwarded as a matter of information to the Supervising Surgeon General of the United States Marine Hospital service, Dr. J. B. Hamilton, and to the boards of health of all maritime ports of the United States.

(g) Communication from the Ohio State Board of Health Relative to the Shipment of Bodies.

PENNSYLVANIA COMPANY,  
OFFICE OF THE GENERAL BAGGAGE AGENT,  
PITTSBURG, PA., July 22, 1891.

Mr. BENJ. LEE, *Secretary State Board of Health, Philadelphia, Pa.:*

DEAR SIR: Herewith see circular of Board of Health of Ohio relative to the transportation of bodies of persons dead of diphtheria.

I would be pleased to have information as to whether your board have taken, or anticipate similar action for Pennsylvania.

If we issue instructions to our agents covering the matter I would like very much to have them uniform in the several states in which our lines operate.

Kindly advise with return of enclosure.

Yours truly,

R. R. BENTLEY,  
*General Baggage Agent.*

OFFICE OF THE SECRETARY,  
COLUMBUS, OHIO, July 7, 1891.

*To all Health Authorities, Railway Companies, General Baggage Agents,  
Train Men and Express Companies:*

We ask your attention to the following changes in the rules for the transportation of dead bodies, adopted by the State Board of Health of Ohio at a meeting held June 25, 1891:

*Rule 1.* The transportation of bodies of persons dead of small-pox, Asiatic cholera, leprosy, typhus fever, yellow fever or diphtheria, is absolutely prohibited.

*Rule 2.* The bodies of those who have died of anthrax, scarlet fever, puerperal fever, typhoid fever, erysipelas, measles, and other contagious, infectious or communicable diseases, must be wrapped in a sheet thoroughly saturated with a strong solution of bi-chloride of mercury, in the proportion of one ounce of bi-chloride of mercury to a gallon of water, and encased in an air-tight zinc, tin, copper or lead-lined coffin, or in an air-tight iron casket, hermetically sealed, and all enclosed in a strong, tight wooden box; or the body must be prepared for shipment by being wrapped in a sheet and disinfected by a solution of bi-chloride of mercury, as above, and placed in a strong coffin or casket, and said coffin or casket encased in a hermetically sealed (soldered) zinc, copper or tin case, and all enclosed in a strong, outside wooden box, of material not less than one inch and a-half thick.

You will please note that the word "diphtheria" has been inserted in rule 1, after the words "yellow fever," and that the word "diphtheria" has been stricken out of rule 2.



This means that the transportation of the body of any person dying of *diphtheria* is now prohibited in Ohio.

As the term "heart failure" is frequently certified to be the cause of death, and as death in diphtheria is often due to heart failure, all health authorities and agents of transportation companies are recommended and urged to refuse to receive a death certificate giving "heart failure" as the cause of death of any person under twenty years of age unless the certificate also states that the heart failure was not due to diphtheria or other contagious disease.

C. O. PROBST, M. D.,  
*Secretary.*

(h) **Communication from the Ohio State Board of Health Relative to Contagious Diseases.**

OHIO STATE BOARD OF HEALTH,  
OFFICE OF THE SECRETARY,  
COLUMBUS, OHIO, *July 7, 1891.*

*To Local Boards of Health and Superintendents of Public Schools :*

SIRS: Your attention is invited to the rules adopted by the State Board of Health for the regulation of quarantine in infectious and contagious diseases given herewith, and to the resolution classing cases of membranous croup among the diseases, to be treated by quarantine and disinfection.

Section two of the act to establish the State Board of Health provides that \* \* \* "It shall be the duty of all local boards of health, health authorities and officials, officers of state institutions, police officers, sheriffs, constables and all other officers and employes of the state, or any county, city or town thereof, to enforce such quarantine and sanitary rules and regulations as may be adopted by the State Board of Health; and in the event of failure or refusal on the part of any member of said boards, or other officials or persons in this section mentioned to so act, he or they shall be subject to a fine of not less than fifty dollars upon first conviction, and upon a conviction of second offense of not less than one hundred dollars."

*Rules Adopted by the State Board of Ohio for the Regulation of Quarantine in Infectious and Contagious Diseases.*

For the protection of the public health it is hereby ordered that the following diseases shall be subject to quarantine for the periods named unless a certificate is furnished by a reputable physician that the patient is free from infection, and that disinfection has been properly carried out, to-wit: For small-pox, diphtheria and scarlet fever, forty days; for measles and whooping-cough, thirty days.

In all cases except in whooping-cough the duration of quarantine shall be reckoned from the day of onset or commencement of the disease, and for whooping-cough it shall be thirty days from the cessation of the characteristic fits of coughing.

The word quarantine, as here used, shall mean the complete isolation of the sick from all but the attending physician and necessary attendants, and the confinement to the house of all children, whether sick or well, unless otherwise ordered by the local or state health authorities until the termination of quarantine.

In all cases of sickness from the diseases above named quarantine shall be maintained until the patient, the sick room and all its contents shall have been properly disinfected.

*Resolution Classing Membranous Croup with Diphtheria and Other Contagious Diseases.*

*Resolved*, That all cases of "pseudo-membranous laryngitis," "membranous croup," "croupous diphtheria" or "diphtheritic croup," shall be classed with the diseases required to be reported to health authorities, and that such measures shall be taken to prevent contagion from such cases as are required in other contagious diseases.

*Directions for Disinfection in Contagious and Infectious Diseases.*

To prevent the spread of infectious diseases the first precaution is to isolate the patient, for by so doing we confine the infectious material (disease germs) given off from the patient's body to the sick room, where they can be readily destroyed.

The sick room should be a well-lighted, well-ventilated room, preferably in the upper story, and as much separated from occupied rooms as possible.

Before taking the patient to the sick room remove carpets, upholstered furniture, heavy curtains, and all other articles not needed by patient or attendants.

There are no disinfectants which will disinfect the air of an occupied sick room without injuring the patient. An abundance of fresh air is the best purifier and should be freely admitted at all times, but without exposing the patient to direct drafts.

The excretions in most if not all infectious diseases contain the poison (disease germs) by which they are spread, and these should be disinfected as soon as possible. Urine and feces should be received in a vessel containing a disinfectant solution; secretions from the throat, mouth and nose should be received on old cloths and be immediately burned or placed in a vessel containing a disinfectant solution. Body linen, bed linen, towels, handkerchiefs, etc., used by the patient may be disinfected by prolonged boiling:—two hours—or by soaking in a disinfectant solution.

When a patient suffering with an infectious disease has recovered or died the board of health should enforce proper disinfection of the sick room and all its contents. All textile fabrics that can be wetted without injury may be made safe by boiling. Wooden furniture, floors, walls, ceiling, windows, etc., should be washed in a disinfectant solution. The room and contents, except clothing that has been boiled, should be fumigated with burning sulphur.

For disinfecting excreta the following is recommended: Fresh chloride of lime, eight ounces; water, one gallon.

Discharges should be received in a vessel containing a quart or more of this solution and allowed to remain therein half an hour or more before being disposed of.

By adding one quart of the above solution to one gallon of water a solution may be made suitable for disinfecting clothing, bedding, dishes, etc. The articles should remain in the solution several hours.

For the same purpose, *i. e.* the disinfection of clothing, towels, handkerchiefs, dishes, etc., the following solution may be used: Corrosive sublimate, one drachm; water, one gallon.

The articles must remain in the solution several hours. This solution is suitable for washing walls, ceilings, floors, windows, etc., and should, after remaining on a few hours, be washed off with soap and hot water.

A corrosive sublimate solution double the strength given above (two drachms to the gallon) may be used for excreta, but it will be necessary to break up and thoroughly mix the excreta with the solution, and to allow them to remain in the solution from two to three hours.

The contents of the room should be spread out with clothing, etc., hung upon lines and fumigated. *Not less than three pounds of sulphur should be burned for each thousand cubic feet of air space in the room.* The sulphur, broken in small fragments and placed in a shallow pan set in a tub partly filled with water to prevent fire and furnish moisture, should be moistened with alcohol and set on fire. After twenty-four hours the room may be opened and aired, and should be again thoroughly cleaned with soap and hot water. Carpets, clothing, etc., should be hung up out of doors and thoroughly aired, beaten and shaken.

As the prevention of the spread of contagious and infectious diseases is one of the most important duties of boards of health, it is urged that all health authorities faithfully carry out the rules and recommendations above given.

By order of the State Board of Health.

C. O. PROBST, M. D.,  
*Secretary.*

## 2. EPIDEMICS.

## (a) Diphtheria at Bangor.

BANGOR, PA., *December 16, 1890.*BENJAMIN LEE, M. D., *Secretary State Board of Health :*

DEAR SIR: Your letter and circulars received yesterday. I will also state that I received circulars October 29, which I intended to acknowledge, by giving you some kind of history of the epidemic which has prevailed here since the first of October. Our population is three thousand with eleven schools, very near six hundred children attending, with quite a population near the line of division of borough and township. When it became evident that the disease was going to spread or become epidemic in character I immediately called the town council together, and we closed the schools for three weeks and issued circulars and posters, also distributed the circulars you sent me, at that time fifty, and at the end of that time we had no more cases in town. That was on the 17th of October. After the school had opened for a week, one family that lived next to where it had been four weeks before was attacked three children ages nine years to five years, all died, all there was in the family. At the same time, about four blocks away, a child seven years of age, daughter of a clergyman, was attacked in a very malignant form, and died on the third day, and there it stopped, and we have had no more of it. From what I can learn of both families (as I was not the attending physician) the disease was not contracted at school. There were no public funerals held except in one family, where the first victim was said to have died with croup. From subsequent deaths in same family from diphtheria, I presume the first one had diphtheritic croup. In the clergyman's family they wanted to have a funeral but the health board would not permit it, and from there I presume came the report, that there had been one. We did everything that we thought we had the power to do, excepting quarantining houses, and if we find any new cases appearing we shall do that. But, as you know, it is very difficult to carry into effect any law that would deprive the people of their liberty. The board has done all in its power, and has been assisted by the physicians of the borough with one exception. Ignorance and negligence kept him from reporting his cases. I cannot say how many cases there were, probably forty-five or fifty. There were seventeen deaths.

Yours truly,

A. A. SEEM, M. D.



## (b) Diphtheria at Bangor, Northampton County.

BANGOR, July 24, 1891.

DR. BENJAMIN LEE, *Secretary State Board of Health, Philadelphia, Pa.:*

DEAR DOCTOR: Yours of the 23d. inst., just received, and in reply would say we have had in the last outbreak eight (8) cases of diphtheria, two of which were very mild (of a catarrhal variety) and six of a very malignant type, all of the latter terminating fatally. We have no diphtheria in our borough at present, and no prevailing epidemic of any kind. We have scarlatina in one family. I have just had handed to me an open letter from you requesting us to pursue the same course as the health committee did last year. We do not know what particular course of the former board of health you recommend us to follow. At the urgent solicitation of the writer and others they requested the board of directors to close the public schools of the borough, the religious denominations to close their Sunday schools, and the parents and guardians of children to keep them from congregating on the streets and lots of the borough. At present our schools are closed, a sanitary survey has been made, and the health board have recommended council to pass an ordinance requiring physicians to report all cases of contagious diseases, with a penalty clause added. We will be pleased to send you a copy of this ordinance, if passed. The health board of last year was urged to ask council to pass a similar ordinance but the only measure taken was a resolution passed by council without a penalty, and as a result about half of the cases were reported by one of the two physicians (who made no report to the town clerk or health board) to the Northampton County Medical Society some time after the epidemic.

In the last outbreak the board of health, at a sacrifice of time and effort, obtained definite information of every case, so that there will be no truthful "Post Hoc" reports of fifty or sixty cases with eight or ten deaths. We are glad to have you make an analysis of the borough water taken from our reservoir. We would suggest that a sample be sent you from the reservoir at the mountain (which up to within a few weeks was simply a dam, though now the water is brought to a small stand-pipe directly from the springs) and also from the reservoir at the Flory's spring. These samples in our judgment should be taken from the reservoirs and not the springs.

The writer, with the chief burgess and others, visited the mountain reservoir and condemned the manner in which the water was gathered from the mountain springs. The water from these springs was allowed to flow into a basin where it was dammed back over grass, brush, muck, etc., and these allowed to rot and decay in the so-called reservoir. This condition has been remedied by taking the water direct from the spring to a small stand-pipe, as stated before. In conclusion, permit us to thank you for the interest you have taken in the welfare of our thriving, and prosperous borough, the suggestions you have made, and the circulars

you have forwarded. Any information you may desire it will be our pleasure to give as far as in our power lies. I have the honor to be,

Yours obediently,

J. BUZZARD,  
*President Board of Health of Bangor Borough.*

#### REGULATIONS BY THE HEALTH COMMITTEE.

WHEREAS, By authority of the ordinances of the borough of Bangor, adopted August 21, 1882, the sanitary or health committee "shall have charge of all questions and matters pertaining to the health of the borough," and all rules or orders which said committee may make and prescribe for the arrest or prevention of disease shall be strictly obeyed or enforced by the borough officers;

*And whereas,* A dangerous disease is now prevalent in our borough, and if proper precautions are not taken the disease may become epidemic to an alarming extent and many become its victims; it is therefore deemed prudent to adopt some rules and regulations relative to the disease and its suppression; therefore, the said committee adopts the following regulations, and requests all citizens respectively to comply with the same:

1. The school board is requested to close the public schools until directed to be opened by said committee.

2. The respective Sabbath or Sunday schools, and all associations composed principally of children, are likewise requested to be closed.

3. All persons are requested to keep their children in their respective houses, yards or near surroundings as much as possible, and to prevent as much as they can the congregating of any large number of children.

4. Every physician practicing in the borough of Bangor is directed to give information in writing to the town clerk, Charles K. Stier, of every case of diphtheria which he may be called upon to attend within six hours after the symptoms of his patient shall indicate, beyond doubt, the disease above named, which notice shall contain the name and place of residence of the person having such disease.

5. The committee recommends the use of disinfectants by the citizens in general in and about their homes.

DR. A. A. SEEM,  
ISAAC BUZZARD,  
DAVID HUDDLESON.  
*Health Committee.*

BANGOR, PA., *October 21, 1890.*

## (c) Small-pox at Scranton.

DEPARTMENT BOARD OF HEALTH,  
SCRANTON, PA., *January 19, 1891.*

Col. E. H. RIPPLE, *President Board of Health :*

DEAR SIR: I herein append a letter just received from State Secretary Benjamin Lee. The contents of the same will explain itself. What directions will you give me as to replying to the secretary's correspondence?

Yours very respectfully,

SAMUEL W. EDGAR,  
*Secretary.*

STATE BOARD OF HEALTH,  
EXECUTIVE OFFICE, 1532 PINE STREET,  
PHILADELPHIA, *January 18, 1891.*

Mr. SAMUEL W. EDGAR, *Secretary Board of Health, Scranton :*

DEAR SIR: Please inform me whether the report of the occurrence of a case of small-pox in your city is correct. If so, state whether it is variola or varioloid, name and age of patient, recent history, probable source of contagion, and precautions taken to prevent the spread of the disease.

I shall be glad to have this information by return mail.

Yours truly,

BENJ. LEE,  
*Secretary.*

DEPARTMENT BOARD OF HEALTH,  
SCRANTON, PA., *January 20, 1891.*

Dr. BENJAMIN LEE, *Secretary State Board of Health :*

DEAR SIR: There has been reported to the board of health a case of varioloid at 326 North Everett avenue. The name of the patient is William Moser, about twenty-five years of age; by occupation mail carrier for postal delivery. The case is one of medium severity, the forehead and cheeks pretty well covered, and some on the nose, ears, back of the neck and hands; the rest of the body free from eruption. I believe the disease has been contracted through handling the mails. The house is situated at the extreme border of the western suburbs. With the exception of two other houses there are no dwellings within a square. There could not be found a more isolated spot in the city limits. There are but four people in the family; the father left home immediately. The house is placarded. All of the children in the neighborhood have been vaccinated, and every precaution has been taken to

prevent the spread of the disease. The family are highly respectable, appreciate the situation thoroughly and will exercise every possible care.

I do not apprehend any spread of the disease, but we can never be sure.

Very respectfully,

W. E. ALLEN,  
*Health Officer.*

(d) Small-pox at Erie.

ERIE, PA., *January 22, 1891.*

BENJAMIN LEE, M. D., *Secretary State Board of Health:*

I have to report a case of very mild varioloid. It was reported by a physician as a suspicious case on Tuesday of this week. Diagnosis could not be perfectly established at that time as very few pustules appeared. Only two or three of these seem inclined to fill. He was at once isolated and has been taken to the contagious disease hospital. As it was totally unexpected I was a little unprepared for reception of patients at hospital. I have now full arrangements made if any more cases occur. He is a brother of an order of teachers in Catholic church. I had the whole school closed and vaccinated all children that did not have good scars in his department.

No idea can at present be formed as to source of contagion. I will report progress from day to day.

Very obediently,

A. A. WOODS, M. D.,  
*Health Officer.*

ERIE, PA., *January 31, 1891.*

BENJAMIN LEE, M. D., *Secretary State Board of Health:*

SIR: Your letter of date January 27th received this day. The case of varioloid reported is simply now keeping secluded. Bed clothing has been destroyed, rooms fumigated, scrubbed, etc. There may be another case developed but I have no fear of it. Vaccination has been vigorously followed up although I have not thought necessary to employ other physicians to do vaccinating nor to order general vaccination. I have simply had it announced in daily press that free vaccinating would be done at my office at stated hours and strongly advising all persons to apply there for the same. In this way I have vaccinated since Wednesday, January 21st, to the present time 605 persons, mostly children, with no extra expense to the city, except of course for virus. In addition I have supplied virus to Dr. J. T. Clark, of this city, one hundred and fifty points, to vaccinate children of the Catholic Orphan Asylum; and to Dr. J. J. Finerty, twenty points, to vaccinate inmates of another home here under Catholic control. Besides this seventy points have been given to



physicians for use among private patients. In all there have been eight hundred and forty-five vaccinations accounted for besides some done by physicians where they secured virus themselves.

I have always vaccinated gratis, but it requires something to spur them up. I have only vaccinated four hundred to five hundred in 1890. As to the source of infection of our case, I am doubtful. A letter was received from San Antonio, Texas, some three or four weeks previous, not by the brother taken, but by another brother in the community. These papers have of course been destroyed on chance. I rather hold to the view that we have had some infected clothing brought in by emigrants, who are constantly coming to our city and keep me "hustling" generally.

Your very obedient servant,

A. A. WOODS,  
*Health Officer.*

ERIE, PA., *January 26, 1891.*

DR. BENJAMIN LEE, *1532 Pine street:*

Case varioloid convalescing; still quarantined; parties interested now deny genuiness; undoubtedly varioloid; no new cases; no danger; am vaccinating freely.

A. A. WOODS.

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(e) **Small-pox at Johnsonburg.**

JOHNSONBURG, QUAY P. O. *February 3, 1891.*

DEAR DR. LEE: I find a case of variola in a child five months old living at Clarion Junction, about one mile from Johnsonburg proper. The house is one of six built in a row. Houses are about twenty-five yards apart. The case is of about nine days standing. It has been seen by Dr. Palmer of this place, Dr. Frank Earley of Ridgway, Dr. Hartman, of St. Marys. All agree that it is variola. Dr. Palmer has vaccinated all persons in that neighborhood and as many others as he had virus for. Since he saw the case, and diagnosed variola (on Friday night, January 30th), no one has been in the house or out of it. A careful voluntary quarantine has been maintained by all the families with one exception. Until Saturday, January 31st, several of the neighbors had been in to see the child, and are therefore liable to an attack of the disease. I personally saw all the families to-day and they agreed to remain away from the house and to remain away from the town proper. One family has failed to keep the promise as I saw a member of it on the street to-day. The men work on the B. R. and P. Ry. If we establish strict quarantine, some provision must be made for their support. Will the state board assume this responsibility or not? I have arranged with a man to receive the orders of the people for groceries, etc., and bring them to town and have the goods sent up on engines.

If guards are placed to maintain quarantine who will pay them? Is the State Board of Health in financial condition to assume so much? I meet a number of citizens to-night and shall talk the matter over with them and see if I can have a fund raised for the purpose. I hope to hear from you by wire, and until I do I shall not order other than voluntary quarantine unless the citizens assume the cost, or the circumstances become more alarming.

I brought twenty vaccine points (all I had of fresh virus) and have used it. Your supply is not yet here. There are needed twenty-five hundred points to vaccinate every person, as there are upwards of that many people here. Shall I offer free vaccination, or can the state compel payment? I shall remain here until to-morrow or longer if necessary. Shall wire you when I leave.

Yours truly,  
S. M. FREE.

JOHNSONBURG, PA., *February 2, 1891.*

Dr. BENJAMIN LEE, *Secretary State Board of Health, 1532 Pine street, Philadelphia:*

Bad case of confluent variola, many expected; come, send or advise at once.

W. R. PALMER.

JOHNSONBURG, PA., *February 3, 1891.*

Dr. BENJAMIN LEE, *Secretary State Board of Health, 1532 Pine street, Philadelphia:*

Undoubted small-pox; one case; quarantine established: is any money at my disposal? Shall I order free vaccination; no virus here; letter by mail; answer quick.

S. M. FREE.

JOHNSONBURG, PA., *February 4, 1891.*

BENJAMIN LEE, M. D., *Secretary State Board of Health, 1532 Pine street, Philadelphia:*

Case dead; funds raised by citizens; strict quarantine this morning; send fifteen hundred points immediately by Adams express.

S. M. FREE.

JOHNSONBURG, PA., *February 11, 1891.*

BENJAMIN LEE, M. D., *Secretary State Board of Health, 1532 Pine street, Philadelphia:*

Two new cases at quarantine to-day; all doing well; no letter from you yet. Telegraphed Governor Pattison for hospital tent and cots. Let me know about nurses and physician; send more vaccine virus immediately.

S. M. FREE.

LETTER FROM E. F. CUMMINGS, JUSTICE OF THE PEACE, JOHNSONBURG PA.

QUAY, ELK COUNTY PA., *February 10, 1891.*

DEAR DOCTOR LEE: I have delayed writing from day to day hoping to get time to write a full account of our trouble here but I've not had time. You heard by letter from me on February 3d. We had a meeting of citizens that night, started a sanitary fund, appointed sanitary and quarantine committees and got up a circular, a copy of which I enclose. Strict quarantine was established on the morning of the 4th, which has been maintained ever since. We have guards day and night and so far as I can learn no one has crossed the line without a permit. There has been some little fussing as expected but nothing serious as yet.

My reason for ordering general vaccination was that some twenty families had been exposed directly, or indirectly, before the first case was recognized as variola. These families resided in different parts of the town. It is a new place, quite thickly populated, very dirty all over, and quite a railroad center four roads coming into it. I did not see how to reach the case effectually except by a house-to-house vaccination.

There are two physicians here, Drs. Murphy and Palmer, who let practice go in order to do vaccine work. We were assisted in a small degree by Drs. Might and Geissinger of the P. & E. R. R. from Kane, and by Dr. Frank Earley of Ridgway. A druggist, Mr. Ronnseville, also gave valuable assistance.

We vaccinated first all who had been at all exposed, then all in the neighborhood of the quarantine, including railroad men in the yards at Clonian Junction. Then we visited the schools, the tannery, the paper mills, and the railroad stations. Then we visited each house. Up to the present time we have vaccinated over 1,700 people. You have sent me 1,550 points, Dr. Palmer had 200 and I had 20. I also got from Dr. Alexander 300 points which I wanted for sale to physicians in surrounding towns. We have been compelled to use from this supply to-day. We have covered the ground quite thoroughly I think. There is a part of Rolfe, a place three-fourths mile west of here and a few places one-fourth mile east that will be visited to-day. There has not been much objection. In such event I have ordered them to immediately leave the place or to be put under arrest. So far as I can find out they have left town or have been vaccinated.

Everything was moving on nicely at the end of the week, no new cases had developed, and I went home to spend Sunday and see my wife who was not at all well. I was summoned by telegram on Sunday and reached here same afternoon,

Since Saturday there have developed one case of variola and two of varioloid in the house where the first case occurred which by the way died on the morning of February 4. It was wrapped in bi-chloride sheets, enclosed in an iron casket, sealed with rubber and buried in the back

yard about fifty yards from the house. One case of varioloid in each of two other houses, and one case of varioloid in the town. This latter case has been removed to a house at the quarantine station, so that we have at this writing five cases of varioloid and one of variola at the quarantine station. All the persons in quarantine have been vaccinated except two who have had small-pox. Some have been vaccinated twice and some thrice. It has taken on all but two; they are children. They have been vaccinated again. I shall not be surprised to have more cases of varioloid developed at quarantine. I am keeping a careful look out for all cases of sickness throughout the town. At present writing things seem to be going on pretty well. We are doing all we can for the people at quarantine, but allow no communication except by talking with twenty foot air space between outsider and insider.

There is some little feeling of complaint in town because of removal of the case from here to quarantine, but had it not been done I'm afraid there would be more the other way.

I have sent word to the surrounding towns, to the chief burgesses, giving a true statement as to affairs here and telling them that they should advise their citizens to be vaccinated as a precautionary measure, and telling them that the State Board of Health would furnish vaccine virus for such purpose at ten cents. per slip (point). Not hearing from you in answer to my telegram asking about this, I ordered and received from Dr. Alexander 300 points for this purpose, on my own account. Some of these I must use for vaccination here. I shall need 500 points more for surrounding towns in all probability, though so many need not come at once unless the demand becomes greater than I think. I have also written to the superintendents of the railroads suggesting that all employes running through here be vaccinated and that passenger coaches be additionally disinfected.

I have given you the present status of affairs as fully as time permits. I am exceedingly anxious to stop the disease at once if possible because this is such an excellent distributing center should it become epidemic. I hope that thus far I have managed the affair to your satisfaction, and that should any new emergency arise I may be able to meet it in the way best for the state and for the welfare of this people.

I wish that you could come up and look over the ground yourself. If you cannot I don't know but that I shall come down in a few days. I have a pass good to Harrisburg and shall write for one from there to Philadelphia and return, so that the expense will be slight.

Would not this be a good time to call the attention of our legislature to the niggardly appropriation given the State Board of Health, and show how helpless it is in such emergency. I am urging these people to apply for a special appropriation to help them, as this will cost them over \$1,000.

Yours very truly,  
SPENCER M. FREE.



## (f) Dysentery at State Hospital for the Insane.

NORRISTOWN, PA., *September 7, 1891.*BENJAMIN LEE, M. D., *Secretary State Board of Health, Phila., Pa.:*

DEAR DOCTOR: In reply to your inquiry, I may state that dysentery made its appearance among the male patients of the hospital (my province, as you know, is confined to the male department) on the 21st of July, and to the present date there have been forty-two cases. Of this number, thirty-seven have already recovered, three died and two are at present under treatment. No new cases have been added to the number since the 30th ult. The cases have been distributed through twelve wards of the eighteen in the department. The largest number occurred in the upper floors of five, six, seven; of the lower floors, the largest number of cases arose in the extreme end of the building, in section 8. As rapidly as the cases developed they have been collected for treatment in the hospital ward, in our one-story infirmary.

The disease has been confined, with the exception of two cases, to the insane portion of the population of the department. There have been, of course, the usual number of cases of sporadic diarrhœa this summer among the employes, but not in excess.

The cause of the dysentery is not definitely made out, although examination into our food supplies, drinking water, ice and milk, makes it evident that the contamination does not come from any of these sources. It is significant, however, that the disease is most prevalent in the crowded parts of the house.

The flushing of our water-closets has not been of late as free and satisfactory as it should be. The defect has been brought to the attention of the trustees who have notified the Norristown Water Company. It seems that the number of houses erected in the west end of Norristown has drawn too freely from our water supply. The water company is making, we understand, proper provision to remedy the defect in the supply of water at the earliest time possible.

The patients attacked thus far do not belong as a rule to our more convalescent and intelligent, on the one hand, nor to the more feeble and demented on the other. Most of the cases were, before the attack, in fair general health. Two of the three that died, on the contrary, were previously much debilitated, and the disease in them was complicated with grave lesions of the brain, heart and kidneys. The third case was, on account of mental condition, not at all amenable to treatment. The post mortem examinations revealed extensive ulcerations throughout the entire length of the large intestines, and, in one case, for a considerable distance, even into the small intestines. The morbid condition, therefore, was much more extensive and severe than in ordinary cases of dysentery. Our pathologist is now pursuing investigations with plate cultures, etc., to shed light, if possible, on the cause of the disease.

Very truly yours,

R. H. CHASE.

g. Diphtheria at Heckscherville, Schuylkill County—A Complaint.

HECKSCHERVILLE, PA., *September 15, 1891.*

*To Secretary of State Board of Health, Philadelphia:*

GENTLEMEN: In the absence of local board of health in our township or county, I take present opportunity to state to your board that we have had an epidemic of diphtheria prevailing in our midst for the past eighteen months, carrying off persons from infancy to sixteen years. Last winter we had serious trouble, and present indications bid fair for a renewal of the scourge this winter. Our physicians don't seem to be able to trace the trouble or control it when it establishes itself on its victims. One family lost four out of five children in a few days last winter. I was speaking to my family physician this morning, Dr. B. C. Guldin, of Minersville. He is also our coroner for this county, and he told me he would willingly accompany your representative if you would send one, and render him every assistance possible. With a view of finding out the cause of this trouble please advise me what, in your opinion, is best to do under the circumstances, and if you desire more definite information kindly write me and I shall be most willing to render you my assistance.

Truly yours, etc.,

JERE. O'DONNELL.

REPLY OF SECRETARY.

*September 17, 1891.*

MR. J. O'DONNELL, *Heckscherville, Pa.:*

DEAR SIR: Accept my thanks for your communication of the 15th instant informing me of the prevalence of diphtheria in your neighborhood. This disease is almost invariably conveyed from house to house and from family to family by direct infection. The only way to stamp it out is to thoroughly educate the people as to the importance of quarantine and disinfection. I send you circulars with regard to the disease, and also with regard to the danger arising from public funerals of those who have died of it. If you will kindly undertake the distribution of these among physicians, clergymen and the people generally, especially those in whose houses the disease exists, or has recently existed, you will be doing more toward preventing the renewal of the scourge this winter, which you dread, than our board could do by ordering an inspection. The instructions of the circular are explicit, and if carried out to the letter the disease will quickly die out.

Yours respectfully,

BENJ. LEE,  
*Secretary.*

## (i) Diphtheria at Galeton, Potter County.

GALETON, PA., *September 28, 1891.*BENJ. LEE, *Secretary State Board of Health, Philadelphia, Pa.:*

DEAR SIR: This place is a village, caused by the building of a large tannery and a sawmill. The houses are low and close together, and filth abounds at every place. We have just had two deaths here from diphtheria, and the disease is spreading. I am trying to stop it but the people will not obey my orders, but will be on the street as soon as they feel able. Most of the people, however, are sufficiently alarmed to use disinfectants.

Will you please advise me what is best to be done?

Yours, etc.,

JAS. T. HURD, M. D.

## REPLY OF THE SECRETARY.

*September 29, 1891.*JAMES T. HURD, M. D., *Galeton, Pa.:*

DEAR DOCTOR: Accept my thanks for your favor of yesterday notifying me of the presence of diphtheria in your village, and of the existence of insanitary conditions contributing to it. I enclose circulars upon this subject which I will request you to distribute very freely both among the well and the sick. If you could make the proprietors of the tannery and the sawmill appreciate their responsibilities in the matter and use their own authority in forbidding those who are still centers of infection from coming back to work in their establishments, you would accomplish a great deal. If they would simply threaten to discharge any employe who disobeyed your orders in this matter you would soon have the disease under control. I also send you a few placards which these gentlemen would do well to have placed upon all infected houses.

Yours very truly,

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*Secretary.*

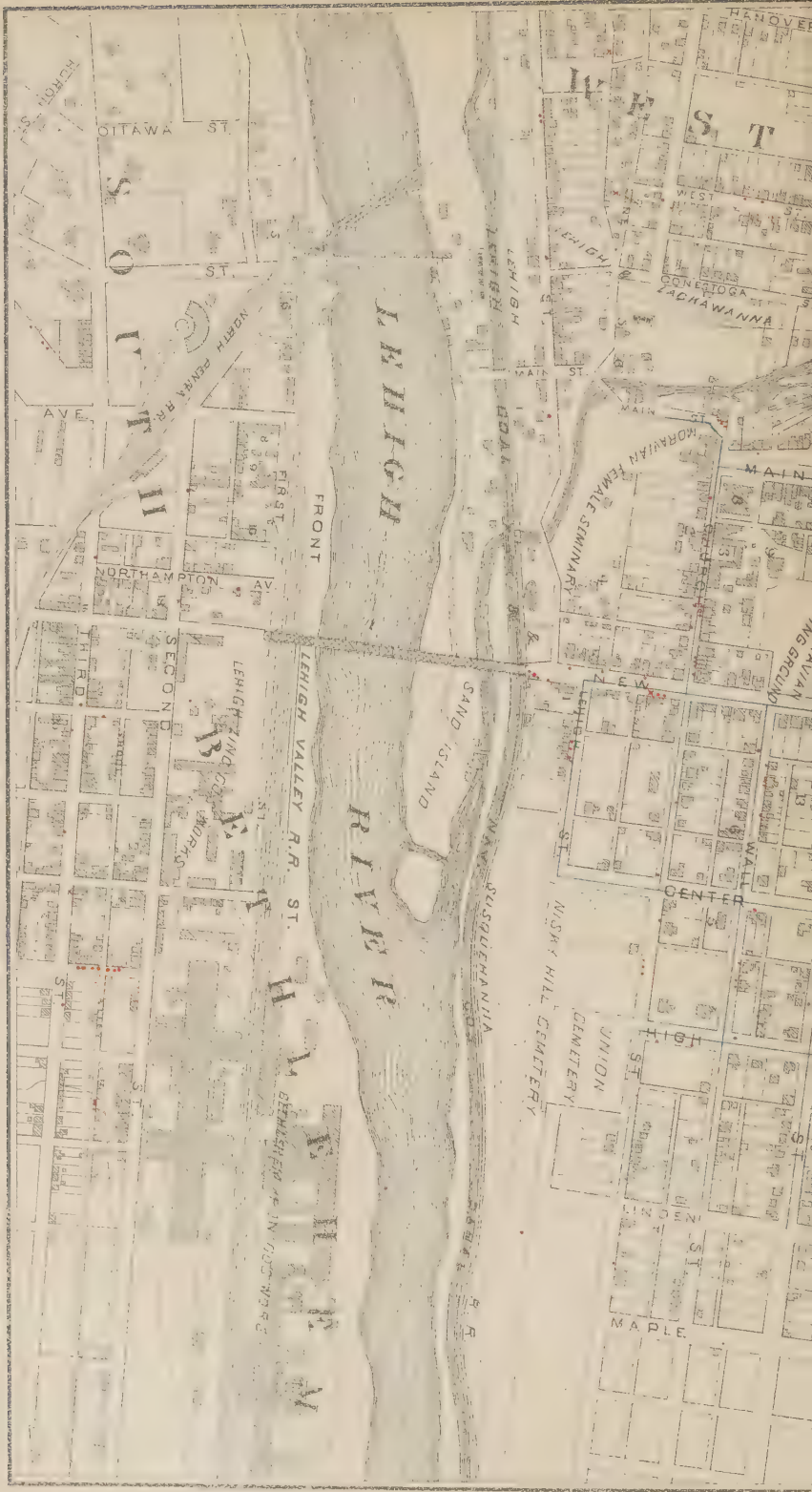
## (k) Typhoid Fever in the Bethlehems

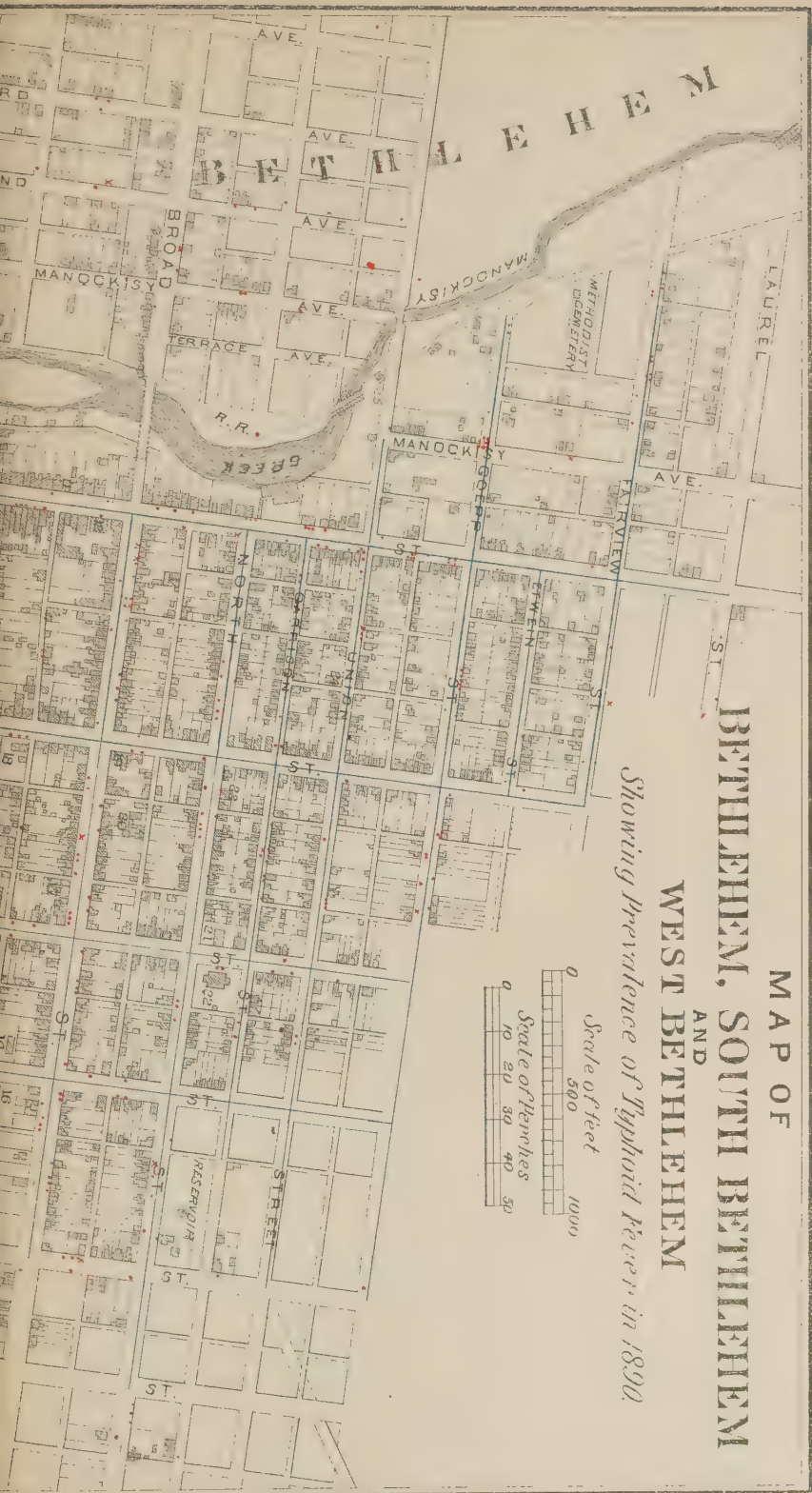
I am glad to be able, at last, to make the final report on the prevalence of typhoid fever in "the Bethlehems" during the summer of 1890. Of the causes for the delay you are already fully acquainted.

The plan of inspection as outlined to you was fully carried out. The physicians of Bethlehem, South Bethlehem and West Bethlehem were interviewed upon the subject, and I desire to express my appreciation of the uniform courtesy shown to me, and the pains taken and the time given by all the doctors to aid me in gathering the material. With a single exception they agreed as to the existence of typhoid fever in the community, and with but three, or possibly four, negative votes, of its











presence in an epidemic form. The diagnosis of the disease was made out by some of the most experienced physicians. They all, without exception, reported the presence of a febrile disease in addition to the cases of typhoid reported, and that these cases of fever, resembling typhoid in some features, greatly outnumbered the cases of true typhoid reported. If, as has been asserted, an epidemic of typhoid fever is usually accompanied by other cases of a febrile nature and attributable to the same cause as the typhoid itself, then the report given below does not begin to include a moiety of those who were in the care of the physicians for diseases of a febrile nature during the period under investigation.

Since so few doctors kept notes of their cases, and the reports in most instances would have been made from memory, it was thought best to limit the statistical part of the investigation to a few simple facts; the number of cases, the number of deaths, and the residence of those sick. The first item is reported with considerable accuracy, the chief liability for error being in reporting some of the febrile cases that accompanied the epidemic as typhoid; these figures may be a little in excess of the true number. The second fact ought to be accurate, but cases came to my knowledge where a person was taken sick, removed from Bethlehem and died. It would be well nigh an impossible task to determine these; the number of deaths is possibly too few. The residence of those sick is only approximately given, although each physician indicated the place on the map. But as new houses had been built since the map was made, and the location on the map was not always clear to the physician, the precise locality on the block may not be indicated. For the purpose for which the information is used, the report is accurate. A copy of the map accompanies this report, the blue line in the streets indicates the pipes of the Bethlehem Water Company; pipes that were laid since August, 1890, are not indicated. A red dot indicates a reported case of typhoid fever ending in recovery, a red cross a reported case resulting fatally. Some cases were reported just beyond the limit of the map, these are indicated as to direction without any attempt to show precisely the place. By this method of investigation I have obtained and plotted in

|                                             | Cases. | Deaths. | Per centum. |
|---------------------------------------------|--------|---------|-------------|
| Bethlehem,                                  | 354    | 17      | 4.8         |
| Beyond Bethlehem to the N. E., . . . . .    | 6      |         |             |
| South Bethlehem,                            | 68     | 10      | 14.7        |
| Beyond South Bethlehem to the W., . . . . . | 1      |         |             |
| Beyond South Bethlehem to the E., . . . . . | 6      |         |             |
| West Bethlehem,                             | 54     | 6       | 11.5        |
| Beyond West Bethlehem to the W., . . . . .  | 2      |         |             |
| Total in the community, . . . . .           | 491    | 33      | 6.73        |



There were quite a number of cases in the country round about, but, of those investigated, most of them came to Bethlehem frequently, some of them regularly, to pursue their vocation, but as each case would require a separate inspection, they are left out of consideration altogether.

To the seventeen deaths in Bethlehem proper should be added at least three, and probably five additional deaths which were not recorded in the above list. This would increase the death rate to 38, or 7.7 per cent. Of the three hundred and fifty-four cases plotted in Bethlehem, three hundred and one of them live along the pipes of the Bethlehem Water Company; fourteen out of the seventeen deaths are found in this number. It is not fair to assume that all of these persons used the Bethlehem water, but the coincidence is not without some weight when other facts, to be presented, are considered.

It would be an injustice to the local board of health to permit an inference that they were idle or unconcerned about this condition. They were very much hindered in their efforts by several causes. In the first place, they had no means of collecting reliable data; there is an ordinance compelling a report of cases of typhoid fever in Bethlehem which "is more honored in the breach than the observance;" some of the physicians reporting the greatest number of cases to me, men, too, who are not inclined to exaggerate their practice, had not reported a single case to the health officer. Then, the opinion of the few physicians who did not regard the disease as typhoid fever was seized by some of the business men, who called the others alarmists, and insisted that any investigation would be a hurt to business; that they had no more cases of sickness than many places around them, and the subject should be spoken of as little as possible. Perhaps, on this account, there were greatly exaggerated rumors of the prevalence of the disease in the country round. If the citizens of Bethlehem can learn from their experience of last summer that the best way to fight an epidemic is openly, with a full report of all cases, and an early, earnest search for the cause, some of the lives lost may not have been lost in vain.

Notwithstanding the difficulties, the board of health began to do what it could. It might, possibly, have been able to do more had not one of the two medical men on the board himself become a victim to the disease. Their first move was an effort to obtain definite information by having one of their number visit the physicians and ask for the number of cases under their care; they had the health officer make a house-to-house inspection to abate nuisances and urge a general clearing up. They reported to the borough council early in August urging that a place be secured to deposit the garbage of the borough, that thirteen cases of typhoid fever had been reported from July 11 to August 2. [This shows the inaccuracy of the official returns, there were two or three times as many cases within these dates.] They also reported that they had placed themselves in communication with Dr. G. G. Groff, president



*8 Cases in*

*10 Cases in western  
part of West Bethlehem.*

W.  
Bethlehem

Be

*7 Cases and  
2 Deaths in Salisbury,  
a Suburb in Lehigh County.*

*18 Cases and  
4 Deaths South  
between Lehigh Un  
and County line.*

CHART SHEWING PREVALENCE OF FEVER IN

burbs North

13 Cases and  
1 Death on Nazareth Road.

Bethlehem

hem

15 Cases and  
1 Death East of  
South Bethlehem.

one  
Case South.

sity

2 Cases and  
1 Death South East.

STRICTS OUTSIDE OF LIMITS OF MAP.





of the State Board of Health, asking advice about an analysis of the water. The council ordered the purchase of a garbage dump, sending samples of water to Dr. Groff for analysis, and the cleaning of the water tank. The board supervised quite a thorough cleansing of the borough, and, as the chemical analyses of the water neither acquitted nor condemned it, had another examination made, this time by Dr. Charles M. Cresson, of Philadelphia. The health authorities were among the more alert of the people and, taking into consideration the power and appropriations granted them, did all that they could.

The extent of the disease did not seem to attract much attention in South Bethlehem. West Bethlehem adopted ordinances compelling physicians to report cases, and to abate several nuisances within the corporate limits.

With this much preliminary there remains the discussion of the probable causes of the epidemic. As has been already shown the water supplied to Bethlehem has been suspected from the first. The public water supply of Bethlehem is obtained from a spring in the valley of the Monocacy creek, situated at the western foot of the hill upon which most of the town is built. Quite a large shallow well has been scooped out of the rock to receive the water, which is covered with a substantial house, every precaution being taken to preserve it from ordinary surface contamination. The surface of the water of the spring is thirteen inches above the ordinary height of the water of the creek, but when the creek becomes very high and overflows its banks the spring is flooded. Testimony varies as to the frequency of this overflow, but I was assured that there had been none in the weeks preceding the outbreak. The size of the spring may be estimated from the fact that 1,000,000 gallons may be pumped from it every day. The water is hard limestone water, clear and pleasant to the taste but, being a hard water, most of the houses are also supplied with cisterns; many of them not connecting with the public supply at all. The distribution of the pipes is shown on the map.

The boroughs of South Bethlehem and West Bethlehem are supplied with water from the Lehigh river. The pumps are located on the south bank of the river above the towns. The water is forced into a reservoir above St. Luke's Hospital, and conveyed by pipes to the two boroughs. One main is laid in the bed of the river to supply West Bethlehem.

Grouping the cases under the possible water supply we have three hundred and sixty cases for Bethlehem and one hundred and thirty cases for the South Bethlehem water supply, enough to cause us to suspect both waters. The population of the two districts changes this ratio, however. The last census places the number of inhabitants of Bethlehem at 6,750, of South Bethlehem at 10,386, to which number probably 2,000 should be added for people living beyond the corporate limits, and West Bethlehem 2,732. Hence the ratio of population is

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about seven to fifteen. Taking this fact into allowance there are still too many cases in South and West Bethlehem to suppose that they were all produced by the Bethlehem water. The examination has been directed almost entirely to the spring water. A possible cause for this may be found in the statement made to me more than once that the owners of the South Bethlehem water works were desirous of supplying Bethlehem, and that much of the outcry against the Bethlehem water originated with them. I have taken care not to inform myself who the owners of these works are, nor even their corporate title, so that I would not have to decide the possible truth of the assertion. It is mentioned here as a possible factor in the discussion.

The distribution of cases given above would be very misleading without any explanation. Many of the inhabitants of West Bethlehem are employed in Bethlehem, and the same is true in regard to South Bethlehem. On the other hand, many of the residents of Bethlehem have frequent opportunity to use the South Bethlehem water. I was desirous of finding authentic cases of those who had not used the Bethlehem water, and through the kindness of the editors of the *Bethlehem Times* and the *South Bethlehem Star*, I published a card asking anyone who had been sick during the summer and who had not used the Bethlehem water to make known the fact to me. I had but a single reply and in this case the only supply of water in the house was the Bethlehem water, the person claiming that he drank only coffee. While this proves nothing it is another coincidence that should be kept in mind. I desire in this connection to acknowledge the kindness shown me by the newspapers. They were most ready to help in any way in their power, indeed they seemed to be the most alert of all the people to discover the true condition of affairs and to find a remedy.

Not all the cases that lived on the line of the water pipes used the public water supply. Some of them use cisterns exclusively, and the inspection of the health officer showed that some of these were directly contaminated with sewage matter, easily explaining the cause for the sickness in the houses using these cisterns.

We have thus far strong circumstantial evidence pointing to the spring as a possible source of the disease. What is the testimony of the analysis? Of the four specimens sent to Dr. Groff for analysis two were of this water, one taken directly from the spring, the other two from the tank or stand-pipe. The analyses were made by Prof. William G. Owens, of Bucknell University, and his report is as follows:

|                                        | (1)                   | (2)                   |
|----------------------------------------|-----------------------|-----------------------|
|                                        | Parts per<br>million. | Parts per<br>million. |
| Free ammonia, . . . . .                | .035                  | .075                  |
| Albuminoid ammonia, . . . . .          | .036                  | .058                  |
| Chlorides, . . . . .                   | 10,080                | 12,880                |
| Nitrates, . . . . .                    | 3,000                 | 3,700                 |
| Nitrites, . . . . .                    |                       | Trace                 |
| Oxygen consumed in one hour, . . . . . | .5                    | .5                    |

Another analysis was made some months later by Dr. Charles M. Cresson, and was reported as follows:

|                                    | (1)                   | (2)                   |
|------------------------------------|-----------------------|-----------------------|
|                                    | Parts per<br>million. | Parts per<br>million. |
| Solid matter to dryness, . . . . . | 249.924               | 309.906               |
| Solid matter to redness, . . . . . | 149.954               | 99.969                |
| Chlorine, . . . . .                | 6.377                 | 6.013                 |
| Free ammonia, . . . . .            | .054                  | .027                  |
| Albuminoid ammonia, . . . . .      | .081                  | .054                  |
| Nitrogen as nitrates, . . . . .    | 2.742                 | 3.119                 |

In comparing these two reports if "chlorides" and "nitrates" in Professor Owens' report mean the same as the more definite statement of Dr. Cresson's report, it may be noticed, first, that there is quite a close correspondence except in the proportion of chlorine. Secondly, a difference between the water at the spring and in the tank, which demands consideration, and, thirdly, the analyses do not precisely correspond.

Dr. Cresson makes these additional notes: To No. 1. "This water is in 'fair' condition for household uses. Microscopical examination shows the presence of a few ciliata bacilli, but no bacteria or evidences of the germs of disease." To No. 2. "This water (although chemical examination does not indicate any large amount of impurity) is unfit for drinking purposes. The microscope shows not only the presence of ciliata, diatoms and zoogaea, but of membrane from the intestinal canal, and of the bacilli which indicate the dejecta of typhoid fever and dysentery. There is apparently more floating vegetable matter and less mineral matter than in sample No. 1."

I. Since the analyses bear a certain degree of resemblance, what deduction can be drawn from them? We may safely infer that the presence of the nitrogen compounds, albuminoid, free ammonia and the nitrates point to the contact of the water with animal matter. The chlorine, too, is a possible witness to sewage contamination. It is perfectly fair to infer that the water has been in bad company sometime in



its career. We can infer neither the amount of this contamination nor how long before it was in company with the contaminator. As far as the impurities determined by a chemical analysis are concerned, the water is a "fair" water for drinking purposes; one that would need a little watching only.

II. A superficial examination of the analysis might lead to the conclusion that the water in the tank was uniformly less pure, and the conclusion of the Bethlehem board of health, *i. e.*, a source of contamination to the water after leaving the spring and before entering the tank, is the correct one. More careful comparison does not bear this out. In Professor Owens' analysis the amount of albuminoid ammonia, free ammonia and nitrates all increase, and a trace of "nitrites" is found in the water of the tank. In Dr. Cresson's analysis the albuminoid and free ammonia both decrease. That the amount of nitrogen as nitrates would increase is easily understood, since the ammonias would be changed by oxidation to this compound. In Professor Owens' analysis the tank water contains more "chlorides;" in Dr. Cresson's there is less chlorine. To my mind these changes point more especially to a variation in the composition of the water itself. The tank is exposed to the air, and some of the street dust might be blown on the surface, but not enough, it seems to me, to account for the increase of the impurities; certainly it would not account for their presence in smaller quantities.

III. If the "chlorides" in Professor Owens' analysis really means chlorine, this would be another fact pointing to the variation in the composition of the water. If the amount given is the weight of some chloride, since the chloride is not stated, no calculation can be made to determine the amount of chlorine and so compare the results with Dr. Cresson's analysis. The same is true of the "nitrates." This hypothesis of the varying amount of impurities would also explain the difference in the results of the microscopical examination.

The microscopical examination of Dr. Cresson is confirmed by Dr. A. L. Kotz, of Easton, recently a student in Weischelbaum's laboratory, in Vienna. Dr. Kotz has made several examinations of the Bethlehem water, obtaining it from a spigot as it flows through the mains, and has determined the presence of the typhoid bacillus on several occasions. He has not preserved his notes, so that the number of times nor the dates cannot be given.

From these reports of the chemical and microscopical examinations of the water, I am led to doubt the purity of the water of the spring for domestic purposes. I do not think the case fully made out, not only from the variations in the analyses, but also from the extreme caution used by the masters in bacteriology in expressing their ability to positively identify the typhoid bacillus when it is removed from the contents of the intestine. Thus Koch, in his address before the Berlin congress, asserts that in the soil, in water, or in dust, numerous bacilli are

found which so closely resemble that of the typhoid bacillus that even skilled bacteriologists cannot differentiate with absolute certainty. These statements have since been confirmed by Bates in the *Zeitschr. für Hygiene*, Bd. IX. S. 323, where he insists that other bacilli will answer to each of the designated reliable tests, and also that there is a possible variety in the typhoid bacillus itself [see *Boston Medical and Surgical Journal*, page 47, of the current volume, from which article these references were taken]. I am, therefore, not able to condemn the water from the evidence of the chemical and microscopical examinations.

But, since there are very serious doubts as to the purity of the water, are there any localities in the vicinity that might prove to be sources of contamination? E. H. Williams, professor of mining engineering and geology in Lehigh University, in a communication to the *Bethlehem Times*, says that Bethlehem is built on a hill of Silurian-Cambrian limestone, while the spring is located at the foot of the hill west of the town. This formation, geologists tell us, is apt to have underground streams of water, and is the formation in which the large caverns are found, and Professor Williams' hypothesis is that such a stream underlies the town of Bethlehem. From the only exposures that I could find the dip of the rock is away from the spring, but parts of it are softer and more easily disintegrated than others; that there is some of this softer rock underlying the town is well known to those who drive shafts for cess-pools. Bethlehem has no system of sewers except to carry off the excess of surface drainage. The excreta are deposited in cess-pools, sometimes there is a water-closet in the house connected with the pool. These holes are of varying depths, some of them sunk deep enough to enter into the more easily disintegrated limestone in order to give "good drainage." This combination offers a possible source of contamination, and it would be an interesting study, were the data obtainable, to determine the relation between the rainfall and the amount of impurities in the spring water.

For, should this be a source of contagion, it does not work uniformly, thus, there were a series of cases of typhoid fever in Bethlehem in December, 1889. Without attempting to secure full statistics I have a list of thirty cases in December alone, the disease died out only to be developed again in July.

Since most of the cases reported in Bethlehem reside along the line of the water pipes; that many of those sick, whose residence was not on these streets, had their places of business within the limits of the water supply; from the difficulty of securing direct evidence of those who did not use the Bethlehem water; from the results of the analyses and the method of disposing the sewage of the borough, I am forced to conclude that the water of Bethlehem is not safe for drinking purposes. I use the word "safe" in rather a limited sense. It at times seems to be perfectly free from contamination, as I find notes of a report by Profes-

sor Formad, of the University of Pennsylvania, in which he pronounces the water free from dangerous micro-organisms, there are times when it does become contaminated and then it ceases to be a safe water. We do not now know the rules governing this change and cannot predict when the water ought to be and ought not to be used; nor can it be told by inspection when the water is pure and when a source of contagion.

However potent for evil the spring water might be, all of the cases reported cannot be traced to this cause, a very fair proportion of those who lived in South and West Bethlehem may be included among these. Professor Owens made an analysis of this water which resulted as follows:

|                                        |       |
|----------------------------------------|-------|
| Free ammonia, . . . . .                | .030  |
| Albuminoid ammonia, . . . . .          | .060  |
| Chlorides, . . . . .                   | 6.440 |
| Nitrates, . . . . .                    | 2.500 |
| Oxygen consumed in one hour, . . . . . | 2.400 |

This contains more albuminoid matter than either of the other waters analysed and requires more oxygen. This shows that this water, while not markedly impure, is not above suspicion. Indeed, with the present absence of law preventing the pollution of streams, one would expect the Lehigh river to be much more readily contaminated than the spring at Bethlehem. I have not investigated the method of sewage disposal of the towns above on the Lehigh river. But, unless more care has been exercised than is usual with municipal corporations, one will not have to seek so carefully nor so remotely for a source of contagion.

It has been asserted that the cause for most of the sickness was not in the water, but in a combination of the weather and the tearing up of the streets for the purpose of macadamizing the roadway. Whatever effect this might have had on the health of the town may be hard to determine, but as Easton is only twelve miles away the weather would be very much the same in the two places. The streets of Easton were also torn up by excavation of a sewer ditch through most of the streets yet the city was quite healthy during the summer and the annual death rate for 1890 less than for 1889; this might indicate that another cause than the turned up streets must be sought.

During the inspection several places were found in an unsanitary condition, which, while they may not come strictly within the limits of this report, ought to be mentioned, that the attention of the proper authorities can be called to them.

I. Until this summer the ashes and garbage were disposed of without any care. The slops from the kitchen were thrown in the ash barrel and carted away, for a time to fill up some lots to grade; these lots will soon be used for building purposes. Later a piece of meadow land in West Bethlehem was used, this is frequently overflowed by the Monocacy creek. After the purchase of the present garbage dump a complaint



was made by some of the people living in the neighborhood, and a report of an inspection was made to you. The recommendations of this report were read to the borough council in a communication from yourself to the chief burgess. I have heard of no complaint since then. But some means ought to be adopted to prevent any damage from the older dumping grounds. The heaps on the meadow were covered with lime at the time of my visit, unless they are all washed away by high water they had better be spread over the meadow and plowed under or carted away. As to the lots that have been filled up a more difficult problem presents itself. It might be well to urge that all cellar walls in those lots be laid up in cement and have a plastering of cement without and within, and that the cellar floors be grouted for a thickness of at least four inches with a cement grouting. If it is thought that this might not afford sufficient protection, it might be well to warn those intending to build of the possible danger until time enough has elapsed to decompose and thoroughly oxidize all organic matter thrown there.

II. Mention has already been made of a sewer to carry of the excess of surface water. This sewer after crossing Main street just north of Union street, terminates in an open drain running between some houses and along a number of back yards, crossing Union street by an open culvert and discharges through a meadow into the Monocacy. The temptation to get rid of refuse from the kitchen is too strong to be resisted. Last September, when I visited it, I found a quantity of old potatoes and apples, a dead rat, a piece of garden or pavement hose ten or twelve feet long in different parts of the drain; it was foul smelling and but a small stream of water was flowing through it. The bottom of the drain is ordinary earth, the grade is sometimes quite slight. When the water is high in the creek it backs up this drain, and if it at that time contains any objectionable articles it scatters them over the meadow for the future action of the sun. Since the culvert is only intended for surface drainage no fault can be found with emptying the water into the creek, but I would suggest that the borough council be advised to change the open drain into a covered sewer until it is well out into the meadow, so that all temptation to improperly dispose garbage be removed. Crossing Union street just east of the present culvert is a culvert no longer used. During the cleaning of the borough last summer this was found to be filled with a stench-producing mass of decomposing animal and vegetable matter. It was thoroughly cleansed, but since it is no longer used I would suggest that it be filled up so that it cannot possibly get into its former filthy condition.

III. The water of the Monocacy creek is dammed in order to provide water power for a mill; this widens the stream and causes the suspended matter brought down from above to settle in the quieter waters. I was told that at irregular intervals the water was drawn off for the purpose, it was said, of catching fish. The exposure of the wet earth, so highly



mixed with organic matter, makes an effluvium decidedly unpleasant. It was reported that there was increase in malarial cases after the draining off the water. If I have been correctly informed, the local health boards ought to be able to abate the nuisance. I would recommend that their attention be called to it.

IV. There are some bone-boiling and fat-rendering establishments in West Bethlehem that are quite near the more thickly settled parts of Bethlehem and West Bethlehem. I did not inspect them, but on general principles they ought to be moved to a less thickly settled part of the community. The borough of West Bethlehem has, I believe, adopted an ordinance for this purpose.

V. During the course of the inspection several places were mentioned to me as possible sources of contagion. Most of these, I found, had been looked after by the health officer of Bethlehem. There was an opinion that a cesspool situated on the brow of the hill, just east of the spring, communicated with an old well and possibly afforded a direct means of contaminating the spring. Inspection showed that it was filled nearly to the surface of the ground and badly needs cleaning. Other information makes this well only thirty-five feet deep. After it is cleansed, should the first rumor be at all well founded, it should be abandoned. The deepest cesspool in the immediate vicinity is sixty-eight feet, and as the top of the curb in the street in front of the house is farther up hill, and is only 50.01 feet higher than the surface of the water in the spring, the bottom of this pit is at a lower level than the spring. I am indebted to Mr. L. J. H. Grossart, C. E., the borough engineer, for the grade data. There are "sinks" a little farther away which, to use the expressive term of my informant, "empty at the bottom." Whatever may be said about cesspools farther away from the spring, these along the brow of the hill seem to be an especial menace, and should be so modified in their construction that there can be no possible chance of contaminating the water.

If the information gathered is accurate and the deductions fairly drawn, what recommendations should be made for the prevention of typhoid fever as an endemic to Bethlehem?

The first thing to be secured is an accurate knowledge of the precise condition of the health of the community. Each of the boroughs should at once insist upon a full return, not only of typhoid fever but of all diseases classed among the communicable, enforcing their regulations by heavy penalties if need be. No funeral should be permitted without the proper burial permit is issued to the undertaker. With such knowledge much that is now obscure would be made clear.

But a precise knowledge of the condition will neither lessen the number of sick nor diminish the death rate. The problem of prevention is still unsolved; it is a difficult and complex one. One of two things must be done—the present method of sewage disposal must be

abandoned or another water supply found. It would certainly be wise to do the former upon its own merit, but that problem is not before us. To determine which should be done as a means of having a pure water supply, it would be necessary to have enough data to decide whether the present amount of sewage matter deposited in the limestone hill is enough to continue to contaminate the water for so long a period that the spring will have to be abandoned at any rate; in that event the only question would be a new source for a supply of water.

Assuming that it is not yet too late to prevent the permanent contamination of the spring, it seems to me that some method should be devised by which the discharge of the sewage matter into the rock can be stopped at the earliest possible moment and at the least possible cost to the residents of the town. Apart from the corporate distinctions, the topography of the three towns would require each one to have a separate sewer system. A proper system of sewers, where the corporation would take care of its own sewage matter, and not with an ignorance or a carelessness which in these days is criminal or barbarous, discharge it into the nearest running water, would be very expensive in a town of the size of Bethlehem. Much care should be taken, consequently, to perfect the plans should a sewage system be deemed advisable. In the meantime the pollution is going on. Some plan should be devised by which this can be prevented during the time necessarily intervening until the proper plans can be devised and carried into execution. I would recommend that the council be advised to regulate the construction of cesspools, requiring them to be laid in cement and made as impervious to water as cisterns usually are, and, if they have the power, to compel all cesspools now in use to be cleaned and made water-tight by means of a proper coating of cement. With the proper care in cleaning these could be kept in a good condition and a further pollution of the rock prevented.

In addition to this the whole problem should be carefully investigated, the actual condition of the water should be determined by a series of analyses at close intervals, the feasibility of purifying it should it continue to be contaminated be discussed, the question of a system of sewers discussed, and the best system applicable to the situation determined upon, and the possibility of securing a new water supply should this be deemed advisable—these and any questions growing out of them should be carefully examined into so that the conclusions reached will not only give the very best results to the borough but will also prevent the outlay of an unnecessary dollar. I am aware that such an investigation will involve the outlay of quite an amount of money, but, assuming that a proper sanitary condition of the borough last summer would have prevented only one-half of the cases reported, and that the average length of sickness was four weeks, and that the average wages of those sick were but fifty cents a day, two thousand dollars

were lost in wages alone, to say nothing of the increased expense and loss of time by those who must care for the sick. An annual expenditure of this sum would be, in reality, a saving to the community, and the investigation would hardly cost that.

These recommendations have been directed more especially to Bethlehem because of the greater number of cases there, but it would also be well for the other boroughs to have their water supply carefully examined; a river like the Lehigh, with large towns on its banks, is open to suspicion as a source for drinking water. Whether the cesspools of West Bethlehem might not help to contaminate the Bethlehem spring, and are consequently a nuisance, is still undetermined in my mind. In parts of South Bethlehem, as is usual in mill towns, domestic sanitation does not receive the attention that it ought, and this may account for some of the cases there. The entire solution of the question will require a carefully kept register of vital statistics and an individual examination of each case. I would suggest that this be brought to the attention of the health boards in South Bethlehem and West Bethlehem, and that they be recommended to carry out such an investigation.

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### 3. SPECIAL SOURCES OF DISEASE.

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#### (a) Disinterment of Bodies, Pittsburg, Allegheny County.

PITTSBURG, *December 10, 1890.*

BENJAMIN LEE, M. D., *Secretary State Board of Health:*

DEAR DOCTOR: I respectfully refer the subject herein mentioned to the State Board of Health for such action as it may deem proper under its regulations for the disinterment of bodies.

The case is briefly as follows:

Until within a short time, Holy Trinity Roman Catholic Church of this city, was in possession of a cemetery or burial ground, located on Wylie avenue, Thirteenth ward. Some months ago they sold the property and purchased a new site in Penn township. Sometime during the month of October the work of disinterment of the bodies and their reinterment in the new cemetery was commenced. Probably more than half of the total number (which is estimated to be about 1,400) have been removed. No permission was asked for or obtained from the bureau of health, as required by your regulations. The subject having been brought to the attention of this department, we at once sought to take action. Our efforts and research in that direction not proving satisfac-

tory, on November 29th I wrote you asking you to indicate what power and authority the bureau of health of this city had in the premises, but thus far have failed to receive a reply.

I know of no specific legislation granting to local health authorities the power to regulate or interfere with such disinterments.

Such being the case, the subject is respectfully referred to your board.

Very truly yours,

J. O. BROWN

*Chief, Department of Public Safety.*

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(b) Small-pox on Steamship Helmsley.

HEALTH OFFICE, CITY HALL.

PHILADELPHIA, *March 20, 1891.*

Dr. BENJAMIN LEE, *Secretary State Board of Health, Phila., Pa.:*

DEAR SIR: Agreeably to your request, we have investigated the subject of your communication of March 16, 1891. It appears that the S. S. Helmsley with iron ore arrived at this port on Thursday, February 19th. The port physician boarded the steamer in the stream, examined all the crew, twenty-two in number, and interrogated the master. The master reported all well on board during the voyage, and the port physician discovered no sickness among the crew. The same day, Dr. Hickman who looks after the health of crews of certain vessels while in port, by arrangement with consignees or masters, visited the vessel and found no one sick. Next day he again visited the vessel to see the engineer, who was said to be suffering from chancre. Saw him and prescribed. Asking if all hands were well, a man was pointed out who had been complaining of an eruption. The doctor examined him and found, as he supposed, a syphilitic rash on breast and neck and none on his face. Took it to be secondary syphilis. Next day vessel left port. The vessel had a return cargo engaged from Newport News and the master was anxious to make time. Whether this man was the one who had small-pox in pustular stage a few days later is the question. If so, there ought to have been marked development of disease, and it should have been easily recognizable on February 20th. The physician says the rash was neither papular nor pustular. These are all the data that could be elicited.

Respectfully yours,

WM. P. TROTH,

*Chief Clerk for Sanitary Committee.*



## (c) Leprosy in Delaware County.

BOOTH'S CORNER, PA., *November 12, 1890.*

BENJAMIN LEE, M. D.:

DEAR SIR: We have a case of leprosy at Delaware county home, I write you to know whether there is not a way by which we can get rid of him, we think it a poor place to prevent the spread of the disease, there are plenty of inmates who do not care for their lives, and would as leave go about him and then to the adjacent towns and villages as to do anything else, therefore feel anxious to get him in some place where the community at large would be safe from inoculation of the dreaded disease. A reply is earnestly solicited.

By order of the board.

CHAS. M. CHEYNEY.

*Secretary Poor Board of Delaware County, Pa.*

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON GENERAL,  
U. S. MARINE HOSPITAL SERVICE,  
WASHINGTON, *November 12, 1890.*

W. H. FORD, M. D., *President Board of Health, Philadelphia, Pa.:*

SIR: I have the honor to acknowledge the receipt of your letter of October 31st, answer to which, I regret to say, from pressure of business has been unavoidably delayed.

I quite agree with you as to the propriety of the suggestion of a place for lepers and so advocated in my address as chairman of the section on state medicine of Nashville last May, but as you will see from a publication in this week's abstract, there is great diversity of opinion among our own people as to what should be done. Consequently, such an institution would have to be for the *voluntary* treatment of such lepers as were sent from states not having laws providing for their segregation, and *involuntary* only from those states where a specific law was provided, under the national law to prevent the spread of contagious diseases from one state to another.

I suppose a regulation can be framed to prevent lepers from traveling, but great expense would be entailed and there is now no law that would entitle us to restrain them from their personal liberty, except at the quarantine stations. We can prevent lepers from coming into the United States under existing regulation, but we can take no action in regard to those already here, except in the general manner indicated, except in case of aliens.

I have no doubt that if the boards of health so desire, congress could be induced to pass a law providing for an institution wherein these un-

fortunate cases can be treated and humanely cared for, but it will require legislation to enable anything to be done in this regard.

Respectfully yours,  
(Signed) JOHN B. HAMILTON,  
*Supervising Surgeon General, M. H. S.*

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON GENERAL,  
U. S. MARINE HOSPITAL SERVICE,  
WASHINGTON, *November 13, 1890.*

BENJAMIN LEE, M. D., *Secretary Pennsylvania State Board of Health,  
Philadelphia, Pa.:*

DEAR DOCTOR: I have to acknowledge the receipt of your letter of November 5th, in regard to a case of leprosy now in the Delaware county pesthouse.

I have to say that as this man is a Swede and unnaturalized, application will be made through the state department for his return to his native country. Please furnish the name, age and residence in Sweden, if known, of the person, in order that the application may be made.

I enclose for your information a copy of a letter this day written to Doctor Ford of the board of health of Philadelphia.

Respectfully yours,  
JOHN B. HAMILTON,  
*Supervising Surgeon General M. H. S.*

OFFICE OF THE BOARD OF HEALTH,  
CHESTER, PA., *January 17, 1891.*

Dr. BENJAMIN LEE.:

DEAR SIR: I have been directed to inform you of the fact that the solicitor for the directors of the poor of the county has addressed a communication to the board of health relative to the case of John Anderson, the leper, confined at the county almshouse.

While the man has never attempted to leave the building, the directors are in constant fear that he will leave the premises, to the great danger of the citizens of the county and the public generally. They have no facilities for restraining him and he is liable to go out into the community at any moment. The board has been appealed to and requested to have him removed.

A special meeting to consider the matter will be held on Monday afternoon next. Any suggestions that you may have to offer bearing upon the disposition of the case will be thankfully received.

Respectfully  
CHAS. B. ROSS,  
*Secretary.*

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON GENERAL,  
U. S. MARINE HOSPITAL SERVICE,  
WASHINGTON, *January 19 1891.*

Dr. BENJAMIN LEE, *Secretary State Board of Health, Philadelphia, Pa.*

SIR: In reply to recent letters and to your telegram of to-day, regarding the leper John Anderson confined in the pest house of Delaware county, I have to inform you that the matter was referred to the department of state, which has returned answer explaining why this government cannot ask of the government of Sweden to bear the expense of the return of this patient.

I have to state, however, that said John Anderson, not being a citizen of the United States, and being desirous of returning to his own country, the only bar thereto being a lack of funds, and being afflicted with a loathsome disease, which may spread by contagion or infection among citizens of the United States, it is deemed proper to meet the expense of his return from the funds under control of this bureau.

I have to request, therefore, that you will purchase such railroad, ambulance, and steamship tickets as are necessary to convey him to the seaport in Sweden nearest to his destination.

Enclosed are blank vouchers in duplicate, which please make out in your own or your agent's name and transmit for payment. Accompanying the account must be sub-vouchers for tickets purchased, signed by the agents.

The vouchers should be receipted at the place marked X, by the person in whose favor they are made out.

Respectfully yours,

JOHN B. HAMILTON,  
*Supervising Surgeon General M. H. S.*

WASHINGTON, D. C., *January 19, 1891.*

Dr. BENJAMIN LEE, *1532 Pine St., Philadelphia, Pa. :*

Transportation will be furnished by this bureau for leper to Sweden; letter to-day.

HAMILTON, *Surgeon General.*

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QUESTIONS TO BE ANSWERED BY THE ATTENDING PHYSICIAN AT THE DELAWARE COUNTY PEST HOUSE.

1. Full name, under which give his name, father's name and name of farm (goardsnom). John Anderson, son of Anders Nelson, village of Versa.

2. Name of parish where born or state? Sorey, Elsborglen (county).

3. Age? 41.

4. Has he any leprous relations? No. Which?

5. Has he had any leprous neighbors or acquaintances? No; never saw one. Who and where?

6. How long has he been in America? Nine years.

7. Where has he been living in America? New Orleans, Chicago, Philadelphia (1883), Bath, Me., Baltimore, New London, Charleston, S. C., and Chester, Pa.

8. When did he first discover signs of the disease? Early in the year 1888.

9. What were the symptoms (describe in detail)? After great exposure in a storm he noticed an anæsthetic spot with some discoloration on left leg below the calf. Soon after his left eyebrow was attacked, and the skin thickened over the forehead.

10. What are the symptoms of the disease now (give its history)? The skin of the face and neck is much thickened. The body is covered with dark spots which are more or less anæsthetic.

11. Has he now, or has he had any sores anywhere? No. Where? Describe.

12. Has he now or has he had any eruptions or discolorations of the skin (describe)? The skin of face is discolored and thickened and the body is covered with dark brown spots.

13. Has he had any elevations of the skin or nodules? It is in ridges or folds. Where and what kind? On forehead and face producing a "leonine countenance."

14. Is there any thickening of the skin anywhere? Yes. In face? Yes. Over eyes? Yes.

15. Is there any partial or complete anæsthesia anywhere? Upon the spots. Where? Over the body. Fingers? Slight. Arms? Yes. Feet? Yes; a complete anæsthetic spot 2x3 inches on posterior part of left leg over upper part of tendo Achillis.

16. Is the eyesight good? Yes.

17. Do the eyes look bright and clear? Yes.

18. Has he lost eyebrows or eyelashes? The eyebrows are nearly all gone, but eyelashes are numerous.

19. Has he lost any fingers or toes? No.

20. Are the fingers crooked? No. Since when?

21. How is digestion, or other functions? Very good and is in fair health.

22. Is he worse at any time of the year than the other? In winter and wet weather. In what respect? Limbs ache and he has a tired feeling.

Any other information bearing on the history and relations of the case, particularly as to any exposure of others by him. I shall be greatly obliged if you can add the facts here called for to our collection of statistics of this disease.

Yours truly,

(Signed) CHARLES N. HEWITT.



## (d) Use of the Flesh of Pregnant Cows as Food.

MIDDLETOWN, PA., *November 17, 1890.*

Dr. LEE:

DEAR DOCTOR: I have been informed there is a general state sanitary law that would cover or prevent the killing or slaughtering of cattle advanced in pregnancy, and have been referred to your office for the information. This practice is carried on with impunity in the country towns. There has been a great deal of sickness in this vicinity, and some have attributed it to using this class of meats. Would you call this diseased or unwholesome meat, and would it create disease, and is there any law to prohibit the killing or selling of such meats for food?

Yours truly,

T. C. LAVERTY, M. D.,

## REPLY OF THE SECRETARY.

1532 PINE STREET, *November 19, 1890.*Dr. T. C. LAVERTY, *Middletown, Pa.:*

DEAR DOCTOR: I am in receipt of your communication of the 17th instant with reference to the slaughtering of animals advanced in pregnancy. There is no law in existence to prevent the killing of such animals or selling of such meat for food, which is probably not unwholesome. I send you "compendium of the laws relating to public health and safety" of the State of Pennsylvania.

Very respectfully yours,

(Signed) BENJ. LEE,  
*Secretary.*

## (e) Pollution of the Water Supply of South Bethlehem.

BETHLEHEM SOUTH GAS AND WATER COMPANY,  
SOUTH BETHLEHEM, PA., *May 5, 1891.*Dr. BENJAMIN LEE, *Secretary State Board of Health:*

DEAR SIR: Will you kindly inform me whether the proposed legislation with regard to protecting our rivers, streams, etc., has been passed? Only last week we discovered the carcasses of two pigs on the edge of river bank in the Lehigh, this side of Allentown, which I had removed and buried. I think it will not be difficult to ascertain who the parties are who put them there, as it seems there are a number of butchering establishments along the Little Lehigh which flows into the Lehigh below the Allentown dam. If the legislation referred to has been had

it would be well to take up this matter and prosecute the parties. We supply two towns with water, viz: South and West Bethlehem, and the Lehigh is our only source of supply, hence it is a matter of importance to us, as you may suppose. We are just now starting to build a large storage reservoir in addition to our present distributing reservoirs for the purpose of settling and purifying the river water, and I can show you a series of very interesting analyses of Lehigh river water taken each month from above the Allentown dam, and from our pumping well on the same day in every month; also analyses of each after settling three days and six days. I propose continuing these tests through the year and then we can get at an average result. Please inform me at your earliest convenience as to what we can do under present laws in matter and oblige,

Yours truly,

B. E. LEHMAN,  
*Superintendent.*

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(f) Letter of Secretary to the Burgess of St. Clair Relative to Defective Drainage.

*July 29, 1891.*

*To the Chief Burgess and Council of the Borough of St. Clair, Pennsylvania:*

GENTLEMEN: I have received a complaint from a large number of citizens of your borough, duly signed and acknowledged before a justice of the peace, of a certain sewer or water-course passing through private lots on the property of J— S—, J— C— and others. The condition of this stream is said to be such as to constitute a source of danger to the health of your community. It is also stated that this subject has frequently been brought to the notice of your honorable body and that you have declined to take any steps to abate the nuisance. I respectfully request an official statement from your honorable body—first, as regards the condition of the stream, and, secondly, the reasons which have led you to consider that you were not responsible for the abatement of the alleged nuisance.

I have the honor to be,

Yours very respectfully,

BENJAMIN LEE,  
*Secretary.*

TOWN CLERK'S OFFICE, SECOND STREET ABOVE FRANKLIN,  
ST. CLAIR, PA., *August 5, 1891.*

BENJAMIN LEE, ESQ., *Secretary State Board of Health :*

DEAR SIR: Your letter in regard to water-course on properties in this borough was duly received and submitted to council and referred to the borough solicitor, and will be attended to immediately.

I am yours, respectfully,

J. A. ERWIN,  
*Town Clerk.*

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(g) Streams Polluted by Sewage. A Letter of S. L. Tone.

4624 FILMORE STREET,  
PITTSBURG, PA., *September 23, 1891.*

*Secretary State Board of Health, Harrisburg, Pa. :*

MY DEAR SIR: I desire to ask you either for some information or where to obtain the same, and while it is, perhaps, taking some liberty with you to trouble you, I trust you will pardon me for I do not know where else to go.

Having been requested to look over a town on the Beaver river in regard to furnishing a plan for sewerage, the first obstacle that occurred to me was the location of outlets. There is a dam crosses the Beaver in the town and the outlets would naturally come down below that, but some three or four miles further down the river is another dam for power purposes, and possibly, but I am not certain at present, a water supply for a small town is drawn out at this second dam. What I desire to know is, how far the question of emptying the sewage into the river below the first-named dam might be controlled by parties owning the second or last dam?

I would like this considered independent of the water supply question of the small town, and again considered with regard to same.

Another matter in regard to outlets is: Suppose a town to be, so to speak, inland, and it requires two or three miles of sewer to connect its system to a river, and it becomes necessary in laying this two or three miles to lay it through adjacent towns or cities (of course, in such case, following the natural drainage creek of the locality), what steps are necessary to procure a right to lay such a line through the neighboring towns or city? Hoping you will not feel imposed upon by my letter, I await your favor in the matter.

Yours truly,  
S. L. TONE.

## REPLY OF SECRETARY.

*September 29, 1891.*

Mr. S. L. TONE, 4624 Filmore street, Pittsburg, Pa.:

DEAR SIR: Your communication of the 23d instant arrived during my absence from the city. I would say in reply to your inquiries: First, that my opinion is that the parties owning or controlling a dam at so short a distance from the town you refer to could take legal action to prevent your emptying the sewage of the town as proposed. Secondly, that you would certainly not be justified in pouring sewage into the stream if it is a source of water supply to the town so near by. Third, that the legislature of 1889 gave incorporated boroughs and cities the right of eminent domain in the transportation of their sewage through the adjacent country, but I do not believe that that could convey the right to carry it through another incorporated town or city. This, however, would be a matter for the courts to decide. In any event, before introducing a system of sewage, you should make ample provision for the effluent before it enters any stream. I send you a circular of the board containing a list of works, which you would do well to refer to in regard to this question. The time is certainly not distant when the legislature of this state will forbid all cities and towns from emptying raw sewage into public waters.

Yours very truly,  
*Secretary.*

## (h) Pollution of Well at Sheridanville, Allegheny County.

## COMPLAINT.

SHERIDANVILLE, PA., *September 22, 1891.*

SIRS: I have had Hugo Blanck, chemist, Pittsburgh, Pa., examine and condemn the water from a well of Mrs. B. in our village.

I have two cases of typhoid fever on hand—with two or more complaining of something not developed. As these parties had been using waters from the above well, I was suspicious.

I now notify you of the fact.

Yours,  
H. E. CLARK, M. D.

## REPLY OF SECRETARY.

*September 29, 1891.*Dr. H. E. CLARK, *Sheridanville, Pa.:*

DEAR DOCTOR: The bureau of health of the city of Pittsburg has forwarded to this office your letter containing information with regard to the pollution of a well, and the occurrence of cases of typhoid fever in the family making use of the water from the same. In order to take



action I should have certified copy of Dr. Blanck's analysis and report. As the case is urgent, however, I will not wait to receive it, but simply request you to forward it on the receipt of this communication. Acting upon this evidence, I condemn the well, and order it to be immediately closed and not again used for drinking purposes. Please write me what the conditions are leading to a possibility of pollution of this well, position of cesspool, drain, stable, etc.

Yours very truly,  
*Secretary*

LETTER TO HERRON & SONS FROM THE SECRETARY.

*October 9, 1891.*

MESSRS. W. A. HERRON & SONS, 80 *Fourth avenue Pittsburg.*

DEAR SIR: I addressed you a communication on October 7th at Sheridanville, which may have been forwarded to you by this time, directing that Mrs. B.'s well should be filled up. Yours of yesterday just received, enclosing one from Mrs. B., does not lead me to alter my decision. The fact that the well has been in use for eight years, without having produced disease has no weight whatever. It simply shows that that length of time was needed for the cesspool contamination to reach the well. The longer a well has been in use the more suspicious it becomes. According to Dr. Clark's statement you have been entirely misinformed as to the possibility of drainage from the cesspool reaching the well. Mrs. B. is entirely mistaken in the opinion which she expresses that typhoid fever is catching, stays in clothing, and remains in a neighborhood independently of contamination of the water or milk supply. Whatever may be the condition of the other wells, this one is certainly badly polluted, and from its position will become polluted over and over again as often as it is cleaned out. If her entire ground is polluted as you say, there should be no new wells dug there.

Yours very truly,  
BENJAMIN LEE,  
*Secretary.*

LETTER TO MRS. B. FROM THE SECRETARY.

*October 9, 1891.*

MRS. N. J. B.—, 25 *North Park Row, Erie, Pa.:*

DEAR MADAM: MESSRS. W. A. Herron & Sons have forwarded to me your letter of October 2d. I regret that I feel myself compelled to adhere to the order given to have the well which has caused so much sickness closed up. If your physician told you that typhoid fever is catching, and stays in clothing, and that your boy took it in that way, he is simply a hundred years behind the times. You might have burned sulphur until you burned the house down, and if people still drank water from that well they would get typhoid fever all the same. This well, can

never be cleaned out so as to be safe, because the filth is all the time draining into it. If there is no place on your lot 200 feet distant from the privy, you should not have a well dug on the premises. I trust that you will lose no time in complying with the instructions of the board.

Yours respectfully,

BENJAMIN LEE,

*Secretary.*

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(i.) Stagnant Pond at Weissport, Carbon County.

STATE OF PENNSYLVANIA, }  
COUNTY OF CARBON, } ss:

Personally came before me, the subscriber, a justice of the peace in and for said county, Jacob Strausburger, Ulysses Kresge, B. K. Cul-ton, A. A. Beltz, John Hamman, Henry Everitt, J. G. Zern, P. J. Kistler, A. W. Marsh, Franklin Laury, Chas. Laury and W. L. Kutz residents of the borough of Weissport, well known to me to be reputable and entitled to credit, and who, being sworn, declare each that there is a pool of stagnant water within the limits of this borough which saturates the ground and partly fills cellars and pollutes the wells doing great damage to property holders and subjecting the occupants to the risk of sickness and disease. It is our opinion that this pool is a nuisance which should forthwith be abated. It is our opinion further that said pool is fed and kept up by water from the canal of the Lehigh Coal and Navigation Company.

We believe it to be the duty of said company to properly ditch and drain said pool, or stop the inflow of water into it, but our appeals to it to do so have not received proper recognition.

Signed by twelve citizens.

Sworn to and subscribed before me this 15th day of July, A. D. 1891.

JOHN S. WILTON, *J. P.*

The matter having been brought to the attention of the president of the Lehigh Coal and Navigation Company, the company, while not willing to acknowledge that the collection of water referred to came entirely from their canal, at the same time promptly directed that a drain should be opened to take the leakage from the canal, and carry it away from this locality, so that whatever standing water might remain would come from the river.

## (k) Nuisance at Nazareth, Northampton County.

## COMPLAINT.

NAZARETH, Sept. 24, 1891.

Dr. BENJAMIN LEE, *Secretary State Board of Health*:

Diphtheria is prevailing around us at Easton, South Easton, Bangor and Pen Argyl, and while we in this town do not have the dreaded disease, we are troubled with an offensive smell emanating from the dishwater coming from the Nazareth Hotel right in the center of the town. This dishwater comes through a wooden trough of about fifty feet in length, comes out from there into the open street with very little fall, in fact for about thirty feet it is constantly wet where the sun lays on it the whole day, and if any escapes it goes into an underground culvert across Main street where it is absorbed by the ground and remains a stench in the nostrils of all the citizens; while we have no board of health, in fact no town ordinances on the subject, and the owner as well as the proprietor of the house has been told by members of town council to abate the nuisance, and no effort is being made, I would appeal to you as one of the members of the board, as to the mode or manner in which the nuisance may be abated, and no doubt the health of the community maintained. Awaiting early reply,

I am truthfully,

Dr. GEORGE W. COPE,  
*Nazareth, Pa.*

## REPLY OF SECRETARY.

*September 29, 1891.*Mr. GEO. W. COPE, *Nazareth, Pa.*:

DEAR SIR: Accept my thanks for your communication of the 24th instant, which arrived during my absence from the city.

I enclose copies of the model ordinance by our board for towns and cities throughout the state. Your first step should be to induce your council to adopt this ordinance to such an extent as it deems it applicable to the conditions of your town. Their powers in this matter are absolute, and they have nothing to do but to pass the ordinance, warn the offender, and fine him if he neglects to obey promptly.

Such action as I recommend will be of real permanent benefit in your beautiful town, while the mere interference of the State Board of Health in a single instance would be of little service.

Yours very truly,

BENJAMIN LEE,  
*Secretary.*

### (1) Slaughter Shops.

By R. HARVEY REED, M. D., *Mansfield, Ohio.*

[The result of the inspections of Dr. Reed so thoroughly describe the condition constantly found by the inspectors of our board as to render the publication of this report in full entirely appropriate.—BENJAMIN LEE, *Secretary.*]

R. Harvey Reed, M. D., at the request of the Richland County Humane Society, examined the slaughter houses of Mansfield, Ohio, and submitted his report at a meeting of the society, November 21, 1890.

On the strength of a score or more complaints from as many different citizens, the sanitary policeman and your health officer made a systematic inspection of the various slaughter houses which encircle our city, during the month of June, July and August. We found ten slaughter houses in all, which can truly be said to surround our city, north, south, east and west.

These shops in point of perfection in construction and arrangements range from miserable to fairly good; in point of cleanliness, from filthy to fair; in point of humanity, to the victims to be slain, from barbarous to fair. They are nearly all just outside the corporation limits, and some of them are two or three miles outside of the city limits. One is just inside the corporation line, while the majority are just beyond the boundary line of the city.

One of the omnipresent associates of each of these slaughter houses is a pen of hogs which are feasted on the blood, intestines and other offal, which constitute their chief diet, and on which they live, grow and are fattened. I inquired occasionally if they fed their hogs corn for a while before they were slaughtered, but received a negative answer; one man said he never killed his hogs for home consumption but sold them to be shipped east.

Just imagine the flavor of pork fattened on the offal of a butcher shop, whose daily drink is blood, and whose diet is the entrails of their slaughtered companions.

You would all "gag" at the idea of eating dog meat, but will you tell me how much better in point of cleanliness and purity a hog is which is fattened on the poorest and foulest class of flesh imaginable, than the carnivora, whose nature it is to live on meat? Is it any wonder Germany has excluded the American hog from their markets? We are not here to condemn the hog that is fattened on corn, and fares sumptuously on pure water every day, but the hog that quenches his thirst with blood and is fattened on spoiled meat and intestines is not fit for the use of man as an article of diet, in the humble opinion of the writer.

A huge pile of bones is another fragrant associate of the slaughter houses with all their delicate and penetrating odors; while as a rule the floors of these houses were open and the blood, bloody water and other



organic juices trickled down between the flooring and saturated the soil beneath, which in turn becomes one seething mass of putrefying corruption filled with offensive and obnoxious odors. Frequently we found baskets and boxes filled with spoiled hams, shoulders, side meat and other decaying flesh ornamenting different parts of the slaughter house to aid in keeping up the fragrance of the room.

Now imagine a hog pen with all its natural odors, to which is added the fragrance of decomposing blood and flesh on one side, a pile of odoriferous bones on the other, and the soil underneath seething with putrefying organic matter, and the room itself ornamented with decaying meat, as were actually the facts in some of these shops, and then imagine such a place to kill and cool the animals from which you obtain your choice roasts and tender steaks, which must hang for hours in this fragrant atmosphere while cooling or awaiting transportation to the city and you have a faint picture of the average butcher shop of our city, and the atmosphere our meat enjoys prior to its journey to the frying pan.

Its transportation from a slaughter house to the meat market is no less romantic; here it is dumped into a dirty, filthy, greasy, bloody, besmeared, stinking wagon box and covered with a dirty cloth that the meanest man in town would scorn to use as a horse blanket, for the worst "crowbait" in the city; which is covered with blood and dirt; smells like a carrion and is little better; but is plenty good enough to cover the tender mutton or stall-fed beef on its way from the slaughter house to the market.

Now, ladies and gentlemen, if you don't believe this and think I am overdrawing the picture, go and see for yourselves, don't take my word for it, and I will guarantee that you will come back and say to me, "the half has not yet been told."

Beeves are shot in the country and hauled for hours in a wagon in the hot weather until I have seen them bloated up like a drum, before they reach the slaughter houses and are dressed. Does any one imagine that adds to their delicacy or improves their flavor?

Under the present management of our butcher shops who knows what kind of animals are killed and supplied to our meat markets? Have we any guarantee that diseased hogs or cancerous beeves and consumptive sheep are not occasionally killed and sold to our people?

We know of two instances where certain parties tried to sell cancerous beef in this city, but were frustrated in their ends by the vigilance of our sanitary policeman. I know that consumption has existed among some of the flocks of sheep in our county. Who knows how many more such cases existed in the county or how many of them were rushed into the market and sold to our people as "spring lamb." I have seen scores and scores of sheep livers from sheep that were slain for our markets literally covered with tubercles, and yet the mutton was sold just the same as though it came from the healthiest wether in the State of Ohio.

Who knows how many choleraed chickens and turkeys have found their way into our markets and been eaten by our people? The common "pudding meat" of our shops has an interesting history, surrounded with fragrance and tainted with romance. This delicate luxury is the child of the shop-soured scraps that have become unsalable, which are cooked up with, and not infrequently, the calves and sheep heads (the two latter with the brains and eyes also), until the bones can be shook out of them, when they are picked out and the meat is ground up and seasoned highly so as to cover any tainted flavor it may have, and is then stuffed in skins, when it is ready for sale and in this way an unpalatable, unmarketable batch of meat is made salable. Bologna sausage may be said to be just a grade above the former, but likewise is composed of shop-soured meat mixed with "blue meat," *i. e.*, old cows and the like that are too poor and tough to place on the market in any other shape.

When an accumulation of this is gathered up it is not unfrequently sent to a foundry on Fourth street, where it is ground by steam in an old dirty, fly-covered cutting box, all gummed up with dried blood, fibrin and meat juices, whose fragrance is enough to entice the buzzards for miles around, but which is little better than some of the meat that is sent there to be ground; after this the meat pulp is highly seasoned; a little smoked bacon is sometimes cut up with it to give it a palatable flavor, when the whole mass is thoroughly mixed and stuffed in skins, smoked a little and placed on the market.

The average butcher sausage shares practically the same fate and is usually made from stale pork and seasoned with sage and other condiments to cover its tainted taste and give it a degree of palatability.

Some of the firms have their own machinery and cut, mix and stuff their own pudding, bologna and sausage, but that is no guarantee that its quality is greatly improved thereby, except that it is not quite so public and in some instances the machinery is kept more cleanly. They, no doubt, think where ignorance is bliss it is folly to be wise, on the part of the general public.

Few of the butchers of this city furnish their own "skins" for the sausage, bologna and the like, but purchase them from Chicago and other large cities. But you ask me what are "skins?" They are the small intestines of the beef, hog or sheep, usually the former, but seldom the latter, which are supposed to be cleaned by washing and scraping until all the mucus lining is removed and the "skin" is left clear and transparent.

Those of us who were raised on the farm and enjoyed the rare luxury of cleaning hog "skins" on butchering day, can recall to memory this tedious process, which requires hours of diligent work, scraping each "skin" with a hickory scraper on a smooth oak shingle, inch by inch,

until it would pass muster, when "blowed up" by our mothers who inspected them carefully to see that they were perfectly clear and transparent throughout, naturally become skeptical when we learn that these "skins" now-a-days are bought by the bushel, so to speak, in Chicago and other large cities, all cleaned and ready for use, for a few cents a pound, and, as butchers have told me, for less than they can clean their own "skins," and then to look at these slimy coverings for our sausage and take a few sniffs of their fragrance before they are used, and I am sure that but few of you will be able to suppress the feeling of skepticism as to their actual cleanliness.

The question now naturally arises, how are we to improve this state of affairs as regard the slaughter houses of our city?

My reply is to establish an abattoir, which, in other words, is a city slaughter house, owned, governed, controlled and run by the city, where all animals and fowls must be inspected before they are killed, and where all meat brought to the city must pass inspection before it is placed on sale in the city markets.

In this way you would only have, and only need to support one slaughter house instead of ten. This could be made first class in all its apartments from a sanitary and cleanly standpoint, as well as from a humane aspect. Ample yards, clean, healthy, comfortable stalls and coops should be supplied, where the animals and fowls can be properly cared for and fed and watered until inspected and slaughtered.

The building should be so constructed as to be always kept in a perfectly sanitary condition, as well as scrupulously clean. The floor should be made so it can be flushed, and kept perfectly clean, and the blood and offal all cleaned up every day and properly cared for, which should be done by cremating it, or by using it for a fertilizer but not by feeding a pen of pigs in an adjoining inclosure to the slaughter house.

If it is used for feeding hogs at all they should be kept far enough away from the slaughter house not to taint the air under any circumstances, and hogs so raised should not be killed for pork until they have been fed for at least six or eight weeks on corn, oats or chop feed, without the use of any offal whatever, before they are killed; and even under these circumstances I do not consider it economy or advisable to use the offal in this way, as it cannot be productive of the highest class of pork.

A competent butcher should be put in charge of this abattoir under the control and direction of the health department of the city and be allowed such help as is necessary to do the requisite amount of work. A competent live stock and dressed meat inspector should be employed, who should inspect all the animals and fowls before they are slaughtered and all the dressed or undressed meat of any kind before it is sold or placed on the market.



In this way and after this manner only can you expect to have the meat supply of our city regulated, and feel reasonably certain of being supplied with good, healthy, wholesome, clean, fresh meat.

I have no doubt but what I will be censured for this report and these suggestions by some of my fellow citizens, but I can assure you I have not made this to injure any one, or interfere with his trade or daily income, but on the contrary to aid the butchers of our city, by getting rid of their individual slaughter shops and establish one central slaughtering place, kept under the control of the city and run in such an economical manner as to just simply cost actual expenses of the same, which will be much less than keeping up ten shops and as many butchers scattered all around our city; and not only that, but be able to insure the cleanliness as well as the healthy condition of the meat slaughtered and sold to the city at large.

This will in no way interfere with the meat markets or prevent any butcher from buying his own beeves, sheep or swine, but instead of killing them himself he takes them to the abattoir, where they are inspected, slaughtered, dressed and the meat returned to him and he charged with the actual expenses for the same, except the cost of the inspection, which the city should pay.

All the rendering of lard and tallow, the making of sausage, bologna and pudding meat and the curing of hams, bacon or dried beef should be done at the abattoir for each butcher and delivered to him in proper condition at simply the cost of production.

No meat dressed outside of the corporation limits should be allowed to be placed on the city markets before it is inspected and receives a clearance card from such officer. All fowls, whether dressed or alive, intended for the city markets should pass through the abattoir and be inspected before being placed on sale, and when dressed for the city trade should be dressed at the abattoir and returned to the salesman or market place.

In Boston, where they established an abattoir in 1877, the clerk of the board of health of that city wrote me: "The establishment of the abattoir in this city removed from our midst a number of slaughter houses that no effort of the board of health could prevent from being an offense to the public in their neighborhood. No complaint has been made against the abattoir since its establishment and from frequent personal examinations it appears to be conducted with the care and vigilance all such institutions should be if they are to be a success such as we believe ours to be."

I trust this report will be received in the spirit in which it is given and not be construed as being intended in any way to injure the butchers of our city, either individually or collectively (who I have no reason to believe are any worse than those of other cities); to avert that I have scrupulously omitted anything personal in it, but have based it entirely



on general information obtained from personal inspection, and whilst I have tried to guard the personal interests of all concerned I have also endeavored to make a careful yet impartial inspection and report, and trust that it will finally result in the greatest good to the greatest number.

If our people are satisfied with the present manner our meat is prepared for the market, they have a right to say so; but if they are not they have a remedy by the establishing and maintaining of an abattoir.

(m) **Analyses of Drinking Water.**

CRESSON CHEMICAL LABORATORY,  
No. 413 LOCUST STREET,  
PHILADELPHIA.

*Analysis No. 7397.*

Examination of sample of water from Northumberland, Pa., from the bottom of a well, collected by Dr. J. W. Sheets, 12 m., November 3, 1890; marked "No. 1." Sample received November 4, 1890. For household use and drinking purposes only. Examination made November 4 and November 11, 1890, by C. M. Cresson, M. D.; amount of sample,  $\frac{3}{8}$  gallon; reaction, alkaline; condition, clear. Contains:

|                                    | Parts in<br>1,000,000 parts. |
|------------------------------------|------------------------------|
| Solid matter to dryness, . . . . . | 629.809                      |
| Solid matter to redness, . . . . . | 364.890                      |
| Chlorine, . . . . .                | 104.868                      |
| Free ammonia, . . . . .            | 0.027                        |
| Albuminoid ammonia, . . . . .      | 0.055                        |
| Nitrogen as nitrates, . . . . .    | 10.284                       |

This water has been badly contaminated at some recent period by cesspool drainage and is unfit for use. It contains ciliata and micrococci in great numbers, and also the bacillus, which indicates enteric disease. All use of it should be prevented.

CHARLES M. CRESSON, M. D.

*Analysis No. 7398.*

Examination of sample of water from Northumberland, Pa., from the surface of a walled well, collected by Dr. J. W. Sheets, 12 m., November 3, 1890; marked "No. 2." Sample received November 4, 1890. For household use and drinking purposes only. Examination made November 4 and November 11, 1890, by C. M. Cresson, M. D.; amount of sample,  $\frac{2}{8}$  gallon; reaction, alkaline; condition, clear. Contains:

|                                    | Parts in<br>1,000,000 parts. |
|------------------------------------|------------------------------|
| Solid matter to dryness, . . . . . | 654.801                      |
| Solid matter to redness, . . . . . | 394.880                      |
| Chlorine, . . . . .                | 102.033                      |
| Free ammonia, . . . . .            | 0.027                        |
| Albuminoid ammonia, . . . . .      | 0.027                        |
| Nitrogen as nitrates, . . . . .    | 10.284                       |

This water has been contaminated by cesspool drainage. This sample contains rather more vegetable matter than "No. 1," and a little less finely-divided mineral matter, which has settled at the bottom, together with a greater number of bacilli, which indicate disease. It is unfit for use.

CHARLES M. CRESSON, M. D.

*Analysis No 7405.*

Examination of sample of water from Marietta, Pa., sent by J. L. Brandt, Esq., through Dr. Benjamin Lee, secretary State Board of Health. Sample received November 8, 1890. For household use and drinking purposes only. Examination made November 8 and November 15, 1890, by C. M. Cresson, M. D.; amount of sample, 1 quart; reaction, alkaline; condition, cloudy. Contains:

|                                    | Parts in<br>1,000,000 parts. |
|------------------------------------|------------------------------|
| Solid matter to dryness, . . . . . | 599.818                      |
| Solid matter to redness, . . . . . | 319.903                      |
| Chlorine, . . . . .                | 36.835                       |
| Free ammonia, . . . . .            | 0.027                        |
| Albuminoid ammonia, . . . . .      | 0.055                        |
| Nitrogen as nitrates, . . . . .    | 10.284                       |

This water has been largely polluted by cesspool drainage, and is probably now receiving such organic matter through some channel in which it is strongly oxidized before reaching this well. It is, however, unfit for drinking purposes. It carries a multitude of organisms such as ciliata and microcci, and also the bacteria, which indicate the presence of dejecta of enteric disease.

CHARLES M. CRESSON, M. D.

*Analysis No. 7428.*

Examination of sample of water from Latrobe, Pa., from W. W. Ulrich, Esq., through State Board of Health. Sample received November 24, 1890. For household use and drinking purposes only. Examination made November 24 and November 28, 1890, by C. M. Cresson, M. D.; amount of sample, 6 ounces; reaction, alkaline; condition, opalescent. Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 96.365                       |
| Free ammonia, . . . . .         | 0.027                        |
| Albuminoid ammonia, . . . . .   | 0.055                        |
| Nitrogen as nitrates, . . . . . | trace.                       |

This water is contaminated with cesspool sewage. It carries micrococci and ciliata in great numbers, with intestinal membrane and the bacilli of intestinal disease. It is unfit for any household or drinking purposes.

CHARLES M. CRESSON, M. D.

*Analysis No. 7458.*

Examination of sample of water from Latrobe, Pa., marked "No. 1," from Dr. B. Lee, secretary State Board of Health. Sample received December 9, 1890. For household use and drinking purposes only. Examination made December 9 and December 12, 1890, by C. M. Cresson, M. D.; amount of sample, 1 pint; reaction, slightly alkaline; condition, clear, with floating particles. Contains:

|                                 |                                     |
|---------------------------------|-------------------------------------|
|                                 | <i>Parts in<br/>1,000,000 parts</i> |
| Chlorine, . . . . .             | 0.354                               |
| Free ammonia, . . . . .         | 0.165                               |
| Albuminoid ammonia, . . . . .   | 0.110                               |
| Nitrogen as nitrates, . . . . . | trace.                              |

This water is in doubtful condition for household and drinking purposes, and, if used, must be carefully guarded to prevent the introduction of decaying animal matter or liquid manure. It will be best to boil it before using it.

CHARLES M. CRESSON, M. D.

*Analysis No. 7459.*

Examination of sample of water from Latrobe, Pa., marked "No. 2," from Dr. B. Lee, secretary State Board of Health. Sample received December 9, 1890. For household use and drinking purposes only. Examination made December 9 and December 12, 1890, by C. M. Cresson, M. D.; amount of sample, 1 pint; reaction, acid; condition, clear. Contains:

|                                 |                                      |
|---------------------------------|--------------------------------------|
|                                 | <i>Parts in<br/>1,000,000 parts.</i> |
| Chlorine, . . . . .             | 21.965                               |
| Free ammonia, . . . . .         | 0.110                                |
| Albuminoid ammonia, . . . . .   | 0.110                                |
| Nitrogen as nitrates, . . . . . | 10.284                               |

This water is in bad condition and not fit for household or drinking purposes. The microscope shows the presence of material derived from cesspool drainage. The contamination has existed for some considerable time, as a large part of the harmful matter has been oxidized, or else it has been freely exposed to the air before its introduction into this water.

CHARLES M. CRESSON, M. D.

*Analysis No. 7523.*

Examination of sample of water from Punxsutawney, Pa., from hydrant at Weaver's, drawn by S. J. Hughes, D. D. S. Sample received January 30, 1891. For household use and drinking purposes only. Examination made January 30 and February 6, 1891, by C. M. Cresson, M. D.; amount of sample,  $\frac{2}{3}$  gallon; reaction, slightly alkaline; condition, opalescent. Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 0.708                        |
| Free ammonia, . . . . .         | 0.055                        |
| Albuminoid ammonia, . . . . .   | 0.027                        |
| Nitrogen as nitrates, . . . . . | trace.                       |

Chemical analysis indicates that this water is in wholesome condition. The microscope shows the presence of a few ciliata, and also of vegetable matter derived from surface wash. This water is in good condition for household use.

CHARLES M. CRESSON, M. D.

*Analysis No. 7568.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked "Mary E. Henderson's well," Philadelphia, March 25, 1891. For household use and drinking purposes only. Examination made February 28 and March 25, by C. M. Cresson, M. D.; amount of sample,  $\frac{3}{4}$  U. S. gallon; reaction, alkaline; condition, clear Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 14.879                       |
| Free ammonia, . . . . .         | 0.027                        |
| Albuminoid ammonia, . . . . .   | 0.054                        |
| Nitrogen as nitrites, . . . . . | { 5.142                      |
| Nitrogen as nitrates, . . . . . |                              |

This water is badly polluted with cesspool material. It carries the spores of lichens, ciliata, micrococci and vegetable bacilli. It is unfit for household use.

CHARLES M. CRESSON, M. D.

*Analysis No. 7567.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked "D. M. Miller's well," March 25, 1891. For household use and drinking purposes only. Examination made February 28 and March 25, by C. M. Cresson, M. D.; amount of sample,  $\frac{3}{4}$  U. S. gallon; reaction, alkaline; condition, clear. Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 13.462                       |
| Free ammonia, . . . . .         | 0.027                        |
| Albuminoid ammonia, . . . . .   | 0.027                        |
| Nitrogen as nitrites, . . . . . | { 4.970                      |
| Nitrogen as nitrates, . . . . . |                              |

This water is badly polluted with cesspool material. It carries the spores of lichens, ciliata, micrococci and vegetable bacilli. It is unfit for household use.

CHARLES M. CRESSON, M. D.



*Analysis No. 7546.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked "W. D. Isett's well," Philadelphia, March 25, 1891. For household use and drinking purposes only. Examination made February 28, and March 25, by C. M. Cresson, M. D.: amount of sample, 4 ounces; reaction, str. alkaline; condition, clear. Sample too small for chemical analysis.

This water carries a considerable amount of vegetable and animal matter with surface wash, ciliata, cladothryx and micrococci in such amounts as to indicate serious pollution and unwholesomeness.

The sample was too small for the usual chemical examination.

CHARLES M. CRESSON, M. D.

*Analysis No. 7569.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked, "E. W. Graffin's well," Philadelphia, March 25, 1891. For household use and drinking purposes only. Examination made February 28 and March 25, by C. M. Cresson, M. D.; amount of sample,  $\frac{3}{4}$  U. S. gallon; reaction, alkaline; condition, clear. Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 49.599                       |
| Free ammonia, . . . . .         | 0.054                        |
| Albumanoid ammonia, . . . . .   | 0.054                        |
| Nitrogen as nitrites, . . . . . | 10.284                       |
| Nitrogen as nitrates, . . . . . |                              |

This is the worst polluted water of the samples received—7567-7574. It carries cesspool material, the spores of lichens, ciliata, micrococci, cladothryx, and vegetable bacilli.

It is unfit for household use.

CHARLES M. CRESSON, M. D.

*Analysis No. 7572.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked "Thomas M. Benner's well," Philadelphia, March 25, 1891. For household use and drinking purposes only. Examination made February 28 and March 25, by C. M. Cresson, M. D.; amount of sample,  $\frac{3}{4}$  U. S. gallon; reaction, alkaline; condition clear. Contains:

|                                 | Parts in<br>1,000,000, parts. |
|---------------------------------|-------------------------------|
| Free ammonia, . . . . .         | 0.027                         |
| Albumanoid ammonia, . . . . .   | 0.027                         |
| Nitrogen as nitrites, . . . . . | 5.142                         |
| Nitrogen as nitrates, . . . . . |                               |

This water carries cesspool material, spores of lichens, ciliata, micrococci, cladothryx and vegetable bacilli.

It is unfit for household use.

CHARLES M. CRESSON, M. D.

*Analysis No. 7574.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked "E. R. Humphrey's well," Philadelphia, March 25, 1891. For household use and drinking purposes only. Examination made February 28 and March 25, by C. M. Cresson, M. D.; reaction, alkaline; condition, slightly opalescent. Contains :

|                                 | <i>Parts in<br/>1,000,000 parts.</i> |
|---------------------------------|--------------------------------------|
| Chlorine, . . . . .             | 16.296                               |
| Free Ammonia, . . . . .         | 0.027                                |
| Albuminoid ammonia, . . . . .   | 0.027                                |
| Nitrogen as nitrites, . . . . . | } 2.742                              |
| Nitrogen as nitrates, . . . . . |                                      |

This water chemically considered is in fair condition for use. The microscope shows that it carries spores of lichens, vegetable bacilli, from surface wash and a few ciliata. These are not sufficient to prevent its use for household purposes and will probably disappear when the wet season ceases.

CHARLES M. CRESSON, M. D.

*Analysis No. 7573.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked "W. O. Brindle's well," Philadelphia, March 25, 1891. For household use and drinking purposes only. Examination made February 28 and March 25, by C. M. Cresson, M. D.; reaction, alkaline; condition, slightly opalescent. Contains :

|                                 | <i>Parts in<br/>1,000,000 parts.</i> |
|---------------------------------|--------------------------------------|
| Chlorine, . . . . .             | 6.376                                |
| Free ammonia, . . . . .         | 0.027                                |
| Albuminoid ammonia, . . . . .   | 0.027                                |
| Nitrogen as nitrites, . . . . . | } 1.279                              |
| Nitrogen as nitrates, . . . . . |                                      |

This water chemically considered is in fair condition for use. The microscope shows that it carries spores of lichens, vegetable bacilli, from surface wash, and a few ciliata. These are not sufficient to prevent its use for household purposes, and will probably disappear when the wet season ceases.

CHARLES M. CRESSON, M. D.

*Analysis No. 7570.*

Examination of sample of water from Dr. Benjamin Lee, secretary State Board of Health, marked "Mrs. S. Thompson's well," Philadelphia, March 25, 1891. For household use and drinking purposes only. Examination made February 28 and March 25, by C. M. Cresson, M. D., amount of sample, 32 ounces, reaction, alkaline; condition, clear. Contains

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 29.759                       |
| Free ammonia, . . . . .         | 0.034                        |
| Albuminoid ammonia, . . . . .   | 0.027                        |
| Nitrogen as nitrites, . . . . . | 5.142                        |
| Nitrogen as nitrates, . . . . . |                              |

This water is polluted with cesspool drainage, spores of lichens, ciliata, micrococci, cladothyryx and vegetable bacilli. It is unfit for household use.

CHARLES M. CRESSON, M. D.

*Analysis No. 7620.*

Examination of sample of water from Spruce Creek, Pa., James Collins' well, April 10, 1891. For household and drinking purposes only. Examination made April 10 and 17, by C. M. Cresson, M. D.; amount of sample,  $\frac{1}{2}$  U. S. gallon; reaction, alkaline; condition, clear. Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 7.794                        |
| Free ammonia, . . . . .         | 0.083                        |
| Albuminoid ammonia, . . . . .   | 0.055                        |
| Nitrogen as nitrites, . . . . . | 3.428                        |
| Nitrogen as nitrates, . . . . . |                              |

This water is in fair condition, it has been polluted by cesspool drainage, but this has been oxydized and is now harmless. The microscope shows the presence of ciliata, micrococci, and some vegetable matter. No bacilli of disease have been discovered. This water can be used for household purposes.

CHARLES M. CRESSON, M. D.

*Analysis No. 7621.*

Examination of sample of water from Spruce Creek, Pa., J. C. Smith's well, April 10, 1891. For household use and drinking purposes only. Examination made April 10 and 17, by C. M. Cresson, M. D., amount of sample,  $\frac{1}{2}$  U. S. gallon; reaction, alkaline; condition, clear. Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 1.417                        |
| Free ammonia, . . . . .         | 0.055                        |
| Albuminoid ammonia, . . . . .   | 0.055                        |
| Nitrogen as nitrites, . . . . . | 2.571                        |
| Nitrogen as nitrates, . . . . . |                              |

This water has passed through a similar course of pollution and cure as has No. 7620. It is however in better condition. The microscope shows the presence of ciliata and micrococci, but no vegetable matter. No bacilli of disease were found. This water can be used for household purposes.

CHARLES M. CRESSON, M. D.

*Analysis No. 7622.*

Examination of sample of water from Spruce Creek, Pa., J. H. Graftin's well, April 10, 1891. For household use and drinking purposes only. Examination made April 10 and 17, by C. M. Cresson, M. D.; amount of sample,  $\frac{3}{8}$  U. S. gallon; reaction, alkaline; condition, clear. Contains:

|                                 | Parts in<br>1,000,000 parts |
|---------------------------------|-----------------------------|
| Chlorine, . . . . .             | 4.251                       |
| Free ammonia, . . . . .         | 0.216                       |
| Albuminoid ammonia, . . . . .   | 0.055                       |
| Nitrogen as nitrites, . . . . . | { 1.371                     |
| Nitrogen as nitrates, . . . . . |                             |

This water is not in fit condition for household use. The microscope shows the presence of ciliata and micrococci and a great amount of vegetable growth, cladothyryx, etc. No bacilli of disease were found but the vegetable growth it contains usually indicates the promotion of malarial troubles. Chemical analysis shows a recent pollution by urine to such an extent as to render this water unwholesome.

CHARLES M. CRESSON, M. D.

*Analysis No. 7623.*

Examination of sample of water from Spruce Creek, Pa., Thos. McClure's well, April 10, 1891. For household use and drinking purposes only. Examination made April 10 and 17, by C. M. Cresson, M. D.; amount of sample, 1 U. S. gallon; reaction, alkaline; condition, clear. Contains:

|                                 | Parts in<br>1,000,000 parts. |
|---------------------------------|------------------------------|
| Chlorine, . . . . .             | 47.005                       |
| Free ammonia, . . . . .         | 0.027                        |
| Albuminoid ammonia, . . . . .   | 0.054                        |
| Nitrogen as nitrites, . . . . . | { 8.227                      |
| Nitrogen as nitrates, . . . . . |                              |

This water contains ciliata, micrococci and evidences of great pollution which has existed for sometime without increasing. It is unsuitable for household purposes; it is probable that if this well shall be thoroughly cleansed the source of the trouble may be removed; in its present state, however, it should not be used for drinking purposes.

CHARLES M. CRESSON, M. D.

*Analysis No. 7649.*

Examination of sample of water from Overbrook, sent by C. W. Quick, Esq., per State Board of Health, Dr. Benjamin Lee, secretary, May 6, 1891. For household use and drinking purposes only. Examination made May 6 and 13, by C. M. Cresson, M. D.; amount of sample,  $\frac{3}{8}$  gallon; reaction, alkaline; condition, clear. Contains:



|                                 | <i>Parts in<br/>1,000,000 parts.</i> |
|---------------------------------|--------------------------------------|
| Chlorine, . . . . .             | 4.959                                |
| Free ammonia, . . . . .         | 0.027                                |
| Albuminoid ammonia, . . . . .   | 0.027                                |
| Nitrogen as nitrites, . . . . . | } 1.714                              |
| Nitrogen as nitrates, . . . . . |                                      |

This water carries but a small amount of hurtful organic matter, the deleterious matter comes chiefly from surface wash and consists of spores of lichens and cladothyryx, a few ciliata which are present indicate animal matter in solution which is probably derived from surface wash. This water is in "fair" condition for household use.

CHARLES M. CRESSON, M. D.

## APPENDIX G.

## CORRESPONDENCE.

1. From the Attorney General of Pennsylvania.
2. From Rev. S. W. Miller, Saltsburg.
3. From the Board of Health of Lancaster.

1. FROM THE ATTORNEY GENERAL OF PENNSYLVANIA ON  
POWER TO ENFORCE REGULATIONS TO LIMIT THE SPREAD  
OF EPIDEMICS.

OFFICE OF ATTORNEY GENERAL,  
HARRISBURG, *December 19, 1890.*

BENJAMIN LEE, M. D., *Secretary State Board of Health, 1532 Pine  
Street, Philadelphia, Pa. :*

DEAR SIR: I have before me a recent communication in which you call my attention to section five of the act of 3d June, 1885, creating the board of health, wherein it is provided that it (the said board) "shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases," and in connection therewith you submit the following inquiry: "Have we a right to interpret this as governing regulations which, from their general sanitary action, would tend to limit the progress of epidemics which may occur in future, or only regulations taking effect when an epidemic has begun in order to limit its progress?" As a case in point you further write that you are "about issuing a circular to undertakers, instructing them what precautions they should take when called upon to bury the body of a person who has died of a contagious disease," and with regard thereto you ask, "must I make this circular simply recommendatory, or can I insist upon certain precautions being taken, the effect of which would certainly be, in a general way, to limit the progress of epidemic diseases?"

The functions of the board of health are mostly of an executive and advisory character, and while they are quite extensive and involve a

large measure of discretion, I do not think that they can be extended by any considerations of supposed advantage beyond the plain import of the language used in the act. The powers committed to the board of health to abate nuisances and prevent the spread of epidemics are of a highly important and responsible character, to be cautiously exercised and on occasions of special emergency, and their execution is often necessarily attended with prompt and radical action in dealing with persons and property. I am therefore inclined to a strict interpretation of that portion of the statute which confers these powers.

In my opinion the power committed by the statute to your board to enforce regulations tending to limit the progress of epidemic diseases is confined to the case of the actual presence of such disease at some appreciable stage of development, or to that of a threatened visitation thereof, as, for example, when the circumstances attending the course and progress of that kind of disease in other states or countries with which we have intimate communication through the avenues of travel and commerce, would justify a belief that the presence of such disease with us is imminent or extremely probable. Beyond that limit your powers would only be advisory. It is, of course, within the sphere of your duty at all times to recommend to the municipal or local authorities having the usual powers in matters relating to the preservation of the public health, the adoption of effective sanitary and preventive regulations and measures in anticipation of future or possible epidemics.

With regard to your proposed circular to undertakers, I think it would be entirely proper to instruct them as to what precautions they should take in case of burial of persons who have died of contagious diseases. My opinion, however, is that such circular should be recommendatory, except in times of the prevalence of such diseases in an epidemic form, when your action would have a more authoritative character. The action of your board in authorizing and promulgating such circular in ordinary times would not have the force and effect of a binding ordinance. The power to supervise and legislate upon this subject is undoubtedly included in the general power to make such regulations as may be necessary for the public health conferred upon the various municipal governments throughout the commonwealth, and the establishment and enforcement of proper precautionary measures, in case of death from contagious diseases, should be referred to the local authorities upon whom that duty is cast, with such recommendations and suggestions as your board may seem proper from time to time to make.

Very respectfully,

W. S. KIRKPATRICK,  
*Attorney General.*

## 2. FROM REV. S. W. MILLER, SALTSBURG. CARCASSES OF DEAD ANIMALS IN RIVER.

SALTSBURG, PA. *May 25, 1891.*Dr. J. R. THOMPSON, *Representative of the State Board of Health :*

DEAR SIR: I have within the past week been made acquainted with a state of affairs in this region that should have immediate attention. And as you, I believe, had charge of this river after the Johnstown flood I write to you. I have learned from men who have been fishing in this river, that the carcasses of animals in sickening numbers lie along the edge of the water in the river. I have called the attention of our officials here to the fact that they might remove those near the village. The rains of the past few days may have carried them elsewhere. These fishermen tell me that opposite the town lie two dogs while on this side the river, barely over the borough line, there lies a calf and another animal. While within two miles below there are two sheep, a colt, and something else on this side of the river. And on the other side, a large hog and two or three other carcasses. And worse than all I am informed that last summer three men were here emptying privy vaults, and that they drove their wagon into the river and emptied the contents there. And that there is a colored man here this summer whose wagon is now broken, he is having it repaired, and I have no doubt unless he is watched he will dispose of his filth in the same way. I was horrified when I heard of these things, and felt that I must write some one connected with or representing the State Board of Health, and your name was given me upon inquiry. I am entirely ignorant of the provisions made by the state, and of the obligations of local officials for looking after the purity of our streams. If this is the condition of this river and of the Allegheny, pity the people of Pittsburg and Allegheny and other towns supplied with the water. I have no reason to doubt the statement made to me. And I would like to be informed whose business it is to look after these things, and how it is done, so that I may exert whatever influence I have in caring for the purity of our waters.

If you cannot reply and look after the matter, will you be so kind as to forward this note to the proper officer. If any one visits this place on this business and will call on me I will do all I can to make them acquainted with the facts and to assist them.

Yours very truly,

REV. S. W. MILLER,

*Pastor Presbyterian Church.*



## REPLY OF THE SECRETARY.

*May 29, 1891.*REV. S. W. MILLER, *Pastor Presbyterian Church, Saltsburg, Pa.:*

DEAR SIR: Dr. J. R. Thompson, medical inspector of the State Board of Health for the Alleghenies has referred to me your letter of May 25th, containing important information with regard to the pollution of the river which passes your village. I regret to be compelled to inform you that, notwithstanding the importunities of our board, the legislature has absolutely refused to pass the bill which was presented to them for the protection of the purity of streams, and this notwithstanding the fact that the matter was brought to their attention in a public meeting held in the hall of the House of Representatives at the instance of the committee on public health and sanitation not only by our board, but by representatives of water companies and municipal corporations from every part of the state, and especially from that west of the Alleghenies. The determined opposition of our lawmakers to listen to the representations of our board, as to the nature and extent of the evil to which you draw attention, evinced more and more strongly at each successive session, ties our hands and leaves us now in a more unfortunate position than ever before. The only resource of individuals or communities who find themselves suffering beyond endurance from such nuisances is to the courts. If in the interval between now and the next session of the legislature you will use your influence personally both upon your people and your fellow members of the clerical profession in so moulding public opinion that the legislature can no longer place itself at the behests of manufacturers, tanners, and butchers in this matter, you will be hastening a much-needed reform.

Yours very truly,

BENJAMIN LEE,

*Secretary.*

## 3. FROM BOARD OF HEALTH OF LANCASTER. BURIAL PERMITS.

*June 26, 1891.*DR. BENJAMIN LEE, *Secretary State Board of Health.:*

DEAR SIR: We are having some difficulty in the matter of funeral permits. Our board was appointed under the act of assembly of May 5, 1876.

The board at the last meeting adopted a resolution that hereafter all physicians should give to the undertaker a certificate of death, and undertaker to procure a burial permit from the secretary of board of health before the burial of the body. Said funeral permit at a cost of twenty-five cents to undertaker. I would like to have your opinion as

to the power of the board, and enclose you a copy of our laws and also blank physicians' certificate and burial permit as adopted by our board. I mark section nine of act of assembly and also ordinance of city.

Yours truly,

JACOB HALBACH,  
*Secretary of Board Health.*

REPLY OF THE SECRETARY.

*July 23, 1891*

MR JACOB HALBACH, *Secretary Board of Health, Lancaster, Pa.:*

DEAR SIR: Your communication of June 26, in reference to the exaction of fees from undertakers for burial permits was duly received. I deferred answering it immediately, in order to present it to the board at a regular meeting, and obtain an expression of opinion on the part of its members. I am instructed to send you the following opinion, based upon the act of assembly and ordinance, which you were good enough to send me. The question may be regarded from two points of view: First, is it expedient for your board to make a charge for the issue of burial permits? Second, has your board the right to make such charge? First, the question of expediency. Our board is extremely anxious that a system of registration of vital statistics should be established in every city and borough in the state. Until this is done, it will be impossible to arrive at any accurate results regarding the health and mortality of our different centers of population or of the entire state. Such a system of registration is very difficult to enforce, in consequence of the ignorance and apathy which prevails in our communities with regard to this subject, on the part of the authorities as well as of the people. It therefore seems unwise to place any additional obstacle in the way of securing such returns, and the enforcement of such a regulation as you suggest will certainly prove a serious one. Secondly, the question of authority. The act of 1876 contains no reference, so far as I can discover, to the subject, being confined to the registration of marriages and births. The supplement to the ordinance establishing your board, while it establishes a penalty for neglect to make a return of a death, does not require the payment of a fee. I have been given to understand that it did originally contain such a clause, but that this has since been stricken out. Your board has no powers outside of these directly conferred upon it by ordinance of councils. I am, therefore, unable to discover any legal ground to justify the enforcement of a fee.

I have the honor to be,

Yours respectfully,

BENJAMIN LEE,  
*Secretary.*

## APPENDIX H.

COMPLAINTS AND ORDERS FOR ABATEMENT OF  
NUISANCES.

Complaints on which action was taken during the year ending:

1. Steelton, Dauphin county.
2. Pottsville, Schuylkill county.
3. Parsons and Minersville, Luzerne county.
4. English Center, Lycoming county.
5. Pittsburg, Allegheny county.
6. Bangor, Northampton county.
7. Scotland, Franklin county.
8. Carbondale, Lackawanna county.
9. Greensburg, Westmoreland county.
10. Scranton, Lackawanna county.
11. Erie, Erie county.
12. Johnsonburg, Somerset county.
13. Gettysburg, Adams county.
14. Bethlehem, Northampton county.
15. Two Lick, Indiana county.
16. Sandy Lake, Mercer county.
17. Cheswick, Allegheny county.
18. Media, Delaware county.
19. Devon, Chester county.
20. Bethlehem, Northampton county.
21. Chestnut Hill, Montgomery county.
22. Saltsburg, Indiana county.
23. Jenkintown, Montgomery county.
24. Altoona, Blair county.
25. Chadds Ford, Delaware county.
26. Braddock, Allegheny county.
27. Bulger, Washington county.
28. Morrisdale Mines, Clearfield county.
29. Prestonville, Chester county.
30. Lansdowne, Delaware county.
31. Lancaster, Lancaster county.
32. Cossart Station and Chadds Ford, Delaware county.
33. Glen Riddle, Delaware county.
34. Weissport, Carbon county.
35. Millville, Columbia county.
36. Shippensburg, Cumberland county.
37. Bangor, Northampton county.
38. Carbondale, Lackawanna county.

39. St. Clair, Schuylkill county.
  40. Nicholson, Wyoming county.
  41. Cressona, Cambria county.
  42. Bulger, Washington county.
  43. Camp Sherman, Chester county.
  44. Bitnerville, Lancaster county.
  45. Tullytown, Bucks county.
  46. Lenni, Delaware county.
  47. Forest City, Susquehanna county.
  48. Schuylkill Haven, Schuylkill county.
  49. Tyrone, Blair county.
  50. Howellville, Chester county.
  51. Ardmore, Montgomery county.
  52. Wallingford, Delaware county.
  53. Lebanon, Lebanon county.
  54. Shanksville, Somerset county.
  55. Montrose, Susquehanna county.
  56. Sheridanville, Allegheny county.
  57. Nazareth, Northampton county.
  58. Butler, Butler county.
  59. Beaver Meadow, Carbon county.
  60. Hecksherville, Schuylkill county.
  61. Rochester Mills, Indiana county.
  62. Fryburg, Clarion county.
  63. Rosemont, Montgomery county.
  64. Ligonier, Westmoreland county.
  65. Leechburg, Armstrong county.
  66. Troy, Bradford county.
  67. Fredonia, Mercer county.
  68. McKee's Rocks, Allegheny county.
  69. Haverford College, Montgomery county.
  70. Coopersburg, Lehigh county.
  71. Wrightsville, York county.
  72. Bolivar, Westmoreland county.
  73. Rankin Station, Allegheny county.
  74. Port Providence, Montgomery county.
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1. Pollution of river at Steelton, Dauphin county. Deposit of night soil and garbage on the banks of the Susquehanna river. The board instructed the secretary to proceed in the usual manner to abate the nuisance.

2. Typhoid fever, supposed to be caused among the employes of the Pottsville Iron and Steel Company by the drinking water. Analysis of this water by Dr. Cresson revealed the presence of an abundance of typhoid bacilli. The spring was ordered to be closed, and the fever at once abated.

3. Diphtheria was reported to prevail at Parsons and Minersville, Luzerne county. Inspection by Inspector Taylor showed that it was not serious, and circulars were distributed and the secretary addressed a letter of instructions to the burgess of Parsons



4. Diphtheria was reported as prevailing at English Center, Lycoming county. Circulars were sent.

5. A complaint was received from the bureau of public safety at Pittsburgh, Allegheny county, that bodies were disinterred and removed without permits. As these bodies had been buried from thirty to fifty years the board did not feel called upon to interfere.

6. An epidemic of diphtheria at Bangor, Northampton county, had been promptly suppressed by the borough sanitary committee. Handbills, etc., had been distributed, public funerals interdicted, all of which was highly approved by the board.

7. A typhoid fever outbreak at Scotland, Franklin county, had been investigated by Inspector Sibbet. He attributed it to polluted well water. Advised the abandonment of the wells.

8. The authorities of Carbondale, Lackawanna county, complained that impure ice was being stored by a dealer. The secretary advised that the man be requested to sell this ice only for cooling purposes; declined. He next advised that the local board give public notice that this ice was impure, which was replied to by a threat of legal proceedings. In the event of this being done the secretary further advised that the dealer's wagons be placarded.

9. A complaint had been received of the insanitary condition of the court house at Greensburg, Westmoreland county. The basement was used as a prison, and the cells were not ventilated, and filthy. Inspector Matthews, after an inspection, confirmed this. The secretary at once condemned the cells, etc. The prison was removed, the cellar cleaned and disinfected.

10. A letter carrier at Scranton, Lackawanna county, had contracted varioloid through handling the mails. The case was isolated, the children of the neighborhood freely vaccinated and no other case occurred.

11. A case of small-pox had occurred at Erie, Erie county, from a similar cause. A teacher in a brotherhood school was attacked. The health officer, Dr. Woods, placed him in a hospital, closed the school, vaccinated 845 cases; no other cases occurred.

12. An alarming outbreak of small-pox occurred at Johnsonburg, Somerset county. Inspector Free took charge of the district, established strict quarantine, vaccinated over 2,000 persons. The secretary also visited the district, conferred with the railroad officials, and every effort was made to prevent the spread of the disease.

13. Deficient drainage at Gettysburg, Adams county, verified by Inspector Sibbet. Nothing done to remedy the nuisance as the board have no power to enforce sewerage.

14. A number of cases of typhoid fever having occurred at Bethlehem, Northampton county, Inspector McIntire made an inspection and reported the origin as being impure water. There had been 492 cases

and 33 deaths. He submitted a plan showing the relation of the cases to the water supply.

15. Typhoid fever having caused sixty cases out of eighty people at Two Licks, Indiana county, Inspector Matthews found the cause to be impure water. One of every eight cases had died. The secretary advised that driven wells be provided and was assured this should be done.

16. Malarial sickness having prevailed at Sandy Lake, Mercer county, Inspector Woods investigated and reported the place built on low, swampy ground, with deficient drainage, neighboring streams sluggish, causing flooding of cellars. The secretary advised the removal of the houses to higher ground, the board having no authority to enforce drainage.

17. Cerebro-spinal fever having prevailed at Cheswick, Allegheny county, Inspector Thompson investigated and reported two deaths in one family. He recommended a general cleaning of the place.

18. The sanitary committee of Media, Delaware county, having complained of want of proper precautions in a recent case of malignant diphtheria in a school there, Inspector Atkinson investigated and reported that very stringent precautions had been taken and there was no ground for complaint.

19. A further complaint of the pollution of a stream by drainage from Devon Inn in consequence of new houses having been connected with the system, was referred to the board for later consideration.

20. The Bethlehem Gas and Water Company complained of the presence of dead animals in a stream used for domestic purposes. The secretary replied, stating the facts with regard to the bill on this subject before the legislature, and suggested recourse to the courts.

21. A complaint that malignant diphtheria and scarlet fever had prevailed at a residence at Chestnut Hill, Montgomery county, Inspector Atkinson had investigated and reported that the drainage from a cess-pool had found entrance to the cellar, and by means of the heater the germs of disease had been carried throughout the premises. One death had occurred. He recommended that the foul earth be removed, replaced with fresh earth and the plumbing be thoroughly disinfected.

22. Pollution of the Loyalhanna river at Saltsburg, Indiana county, was reported by a minister, but the secretary had to reply that the legislature opposed interference with such matter. He asked the co-operation of the clerical and other professions in an effort to induce the legislature to pass laws against such pollution.

23. A complaint relative to the drainage of ten houses at Jenkintown, Montgomery county, caused the secretary to write to the borough council. A reply was received that the street named would soon be paved and drained.

24. Complaint of defective drains at Altoona, Blair county, had not been affirmed as required.

25. A similar complaint of stream pollution at Chadd's Ford, Delaware county, also lacked affirmation.

26. A complaint of pollution of the Monongahela river at Braddock, Allegheny county, by dumping garbage from a boat. As the Pittsburg authorities had ample powers no action was taken.

27. The pollution of the stream at Bulger, Washington county, by decomposing whey and refuse from a creamery was complained of. A similar complaint occurred last year and its abatement had been ordered. The board directed that immediate action be taken.

28. Complaint was received of nuisance at Morrisdale mines, Clearfield county, relative to a slaughter house. The usual forms were sent but no reply was received.

29. A complaint of the prevalence of diphtheria at Prestonville, Chester county was investigated by Inspector Atkinson, who reported defective drainage of the cellar of the infected house, and he ordered the nuisance abated.

30. Complaints of defective drainage at Lansdowne, Delaware county, were received but returned for amendment.

31. A complaint of the prevalence of typhoid-fever at Lancaster, Lancaster county, being confirmed by Dr. S. T. Davis, an inspection was ordered forthwith.

32. A complaint relative to the pollution of the Brandywine river from the Delaware State Board of Health was received. The pollution was by the carcasses of dead hogs and drainage from creameries at Cosart Station and Chadds Ford, Delaware county. This was investigated by the secretary and Inspector Atkinson, and fully confirmed as regards the creamery at Chadds Ford. Notices have been sent to the parties requiring an abatement, which was being carried out.

33. The prevalence of diphtheria at Glen Riddle, Delaware county, had been reported, and Inspector Atkinson had investigated and found cases at the railroad station. There had been several previous cases in this house. Its sanitary condition was very imperfect. There was leakage into the cellar, and drainage from roadway under the kitchen floor. The general manager of the road had written that it should be corrected.

34. Owing to defective drainage, stagnant water from a canal bed had filled cellars at Weissport, Carbon county. The president of the Lehigh Coal and Navigation Company, while considering the nuisance not to be caused by their road, yet promised to drain this leakage off.

35. An investigation as to the cause of typhoid fever at Millville, Columbia county, disclosed that a spring at the bottom of a hill near the residence of a physician was being contaminated by cesspool material from a disused well. The cases of sickness had occurred among train hands and others who drank at this spring. The secretary ordered it to be closed at once.



36. An inspection by Inspector Sibbet of a complaint that scarlet fever prevailed at Shippensburg, Cumberland county, showed that fifty cases and several of typhoid fever had occurred. The borough was in a bad condition. The citizens were called together and urged to abate the privy nuisance by the purchase of an odorless excavator, the free use of disinfectants, the appointment of a sanitary committee, the abatement of pig pen, stable and slaughter house nuisances, and the closing of all wells within one hundred feet of any such places.

37. Diphtheria again prevailing at Bangor, Northampton county, six deaths occurring in eight cases, circulars were sent, and suggestions were made to the board of that place.

38. The board of Carbondale, Lackawanna county, having complained of their inability to enforce the laws as to drainage, asked advice. Inspector Taylor visited the place and conferred with them, and reported great progress in sanitary matters since his visit in 1888, brick pavements having been laid in the center of the town, and about 16,000 feet of sewers constructed. The great need was a complete sewer system. The secretary had written to their board pointing out that power to order sewerage and provide the necessary appropriations were vested solely in councils, and endorsing the recommendations of the inspector.

39. Complaint from St. Clair, Schuylkill county, of a nuisance from a blocked up sewer caused the secretary to notify the borough authorities that it should receive immediate attention.

40. A complaint that filth from a Tannery was run into Martin's creek at Nicholson, Wyoming county, caused an inspection by Inspector Taylor, who reported the nuisance in part abated, but suggested that the pipe from the creamery be lengthened, and that the liquid in which the hides are soaked at the tannery be emptied into Tunkhannock creek about three-eighths of a mile away. The owners promised that this should be done.

41. A request from Hon. L. R. Keefer for an investigation into the cause of typhoid fever at Cressona, Schuylkill county, was followed by an inspection by Inspector Weidman, who found ground to suspect the pollution of several wells. Analysis of the water of several wells showed contamination and these were closed. The epidemic was soon controlled.

42. The obstinancy of P. Hermes at Bulger, Washington county, caused the secretary to threaten him with legal action. In reply, he denied the existence of any nuisance. The secretary was directed by the board to act accordingly.

43. The attention of the secretary having been called to the location of a portion of Camp Sherman at Devon, on marshy ground near a contaminated stream; this had been pointed out to the commanding officer, and that portion had been removed to higher ground. A complaint was received shortly after the close of the camp that large quantities of garbage and cesspool matter had been left exposed. Inspector



Atkinson and the secretary on investigation found that all this matter had been just before their visit covered with fresh earth, and cause for complaint removed.

44. During the last meeting of the board, complaint had been made of typhoid fever at Bitnerville, Lancaster county, this was investigated by Inspector Hartman who reported that the cesspool matter from nineteen cottages was carried in an open trench about eighty yards back, where it remained, the stench being most offensive. This trench was recommended to be covered, and proper cesspool drainage provided for the cottages, subsequent inspection by Dr. S. T. Davis showed this to have been done, and no further action was needed.

45. A slaughter house nuisance at Tullytown, Bucks county was inspected by Inspector Atkinson, who reported the house in a very unsatisfactory condition, pigs fed on offal, no drainage and foul odors arising from the place. He urged the removal of the house outside Tullytown, which the secretary at once ordered. Later, the tenant and owner waited on the secretary and agreed in a sworn affidavit to cease feeding the offal to pigs, to cement the floor, remove the pig pen, and clean up the entire premises if allowed to remain. On these terms the secretary allowed the slaughter house to remain.

46. A complaint that diphtheria prevailed at Lenni, Delaware county, was investigated by Inspector Atkinson, who reported no ground for action.

47. By request of citizens of Forest City, Susquehanna county, Inspector Taylor examined that place and reported it in a deplorably filthy condition. Filth of privies and house drains run everywhere through house yards; there was no sewerage, and the stench was horrible. Typhoid fever had existed for two months. The secretary pointed out to the council the danger of this condition and endeavored to dissuade them from allowing it longer to continue.

48. The board of health of Schuylkill Haven, Schuylkill county, had asked co-operation of this board in removing dangerous nuisances in that borough. Inspector Weidman had inspected and the secretary urged the local board to carry out his suggestions.

49. Diphtheria having been reported at Tyrone, Blair county, Dr. G. G. Groff visited the place and advised with the burgess and citizens. The secretary urged them to pass an ordinance requiring physicians to report all cases, to issue a proclamation, and distribute circulars, etc. The progress of the epidemic was checked.

50. Scarlet fever having been announced as prevalent at Howellville, Chester county, Inspector Atkinson investigated, and reported many nuisances, especially caused by filthy immigrants. The Pennsylvania railroad, the owner of the quarry, and others were written to by the secretary and urged to co-operate in removing these conditions.

51. Deposits of manure at Ardmore, Montgomery county, by the Pennsylvania railroad were complained of, and the secretary advised the company that the transportation be either postponed till cold weather, or some other point be selected as a deposit. The grievance was at once removed.

52. Serious conditions as a result of defective drainage at Wallingford, Delaware county, required a visit of Inspector Atkinson, who reported the ground saturated in all directions with sewage, each man draining on his neighbor's property. Owing to the action of the secretary, the nuisance originating the complaint was abated, but unless the entire place is properly drained, he fears grave results in the near future. Four inspections had been made, each confirming the great need for prompt action. The secretary urged the residents to form a sanitary protective association and adopt regulations as to the drainage and other matters affecting the health of the place.

53. The water supply of Lebanon, Lebanon county, being reported as polluted Inspector Weidman investigated the matter, and found cause for contamination from the feces of workmen engaged in constructing a dam. The results were sent to complainants who are publishers of a daily paper in Lebanon.

54. Typhoid fever reported at Shanksville, Somerset county, on investigation by Inspector Hackney, proved to be malarial due to deficient drainage and general filthiness, upon which the secretary suggested certain sanitary measures.

55. A complaint of the prevalence of typhoid fever at Montrose, Susquehanna county, was investigated by Inspector Taylor, he failed to verify the complaint, only finding some minor nuisance. The secretary had already advised the burgess of the needed reforms.

56. The board having been notified of a polluted well at Sheridanville, Allegheny county, and the analysis of the water confirming this, the secretary immediately ordered the well closed.

57. Diphtheria having been reported at Nazareth, Northampton county, the secretary sent a supply of circulars with instructions for preventing the spread of the disease.

58. Typhoid fever was reported as epidemic at Butler, Butler county, Inspector Thompson investigated and reported it to be due to drinking polluted well water. He urged the erection of a garbage furnace and the establishment of a local board of health. The secretary sent documents for this purpose, and urged the closing of all suspected wells.

59. In reply to a complaint as to typhoid fever at Beaver Meadow, Carbon county, the secretary urged that committees be formed by the citizens and a house-to-house inspection be made.

60. Diphtheria had prevailed at Hecksherville, Schuylkill county, and the secretary had sent circulars and advisory letters.

61. A complaint of typhoid fever at Rochester Mills, Indiana county,

had been investigated by Inspector Matthews, who attributed it to contaminated water, and suggested that a well be dug for the use of the people of the town ; the secretary sent for samples of the water for analysis, but no reply had been received.

62. to 74, were complaints of minor nuisances at the places named, but in each case the needed affidavits had not been received.

## APPENDIX I.

## CIRCULARS AND FORMS.

1. Precautions Against Sunstroke.
2. School Hygiene.

[Circular No. 32.]

## 1. PRECAUTIONS AGAINST SUNSTROKE.

## CAUSES.

This dangerous illness is caused by excessive heat of the blood (from 100° to 110° Fahrenheit), which produces great depression of the nervous system. It occurs during the hot season of the year, and usually to those exposed to the hot sun; but it sometimes occurs at night, and also to those exposed to great heat in glassworks, laundries, furnaces, bakeries, iron foundries, and the engine rooms of steamships. It is largely confined to the hot, close streets and passages of the cities, but is not unknown in the country. Those habituated to the use of alcohol, and the debilitated, are especially predisposed to attacks.

## PRECAUTIONS.

Dark, close-fitting clothing, and such as compresses the chest and neck, should be avoided during the heated term. For those obliged to labor in the sun, light clothing and a straw or light felt hat, permitting free circulation of air, are preferable.

On very hot days one should drink frequently but in small quantities. A large amount of ice water, cold beer, soda water, mineral water or other iced drink entering the stomach at one time is injurious.

Cool water, into which oat meal has been stirred, is a safe and refreshing drink. Water should not be drunk in considerable quantities at a lower temperature than spring water, namely, 56° Fahrenheit. Immediate death is often caused by "ice cold" drinks. The immoderate use of alcoholic beverages is also dangerous.

The sleeping room should be freely ventilated and cool. Constipation of the bowels should be avoided. When over-heated work slowly,



frequently cooling the head, chest and back with cold water. Keep a wet cloth or some green leaves in the hat on the head, frequently wetting them with cold water. When on a very hot day the skin becomes dry and uncomfortably hot, a burning sensation is felt in the head, and the face is flushed and the eyes blood-shot, with frequent tendency to urinate, the person should immediately quit work, retire to a cool place and rest in quietness, and if not speedily relieved from sensation of heat, take a cold bath.

#### SYMPTOMS.

The attack may be very sudden and take the form of delirium, in which the patient rushes wildly about and may attack those around him, or he may become weak and sink to the ground as if in a fainting spell or stupor. Loss of consciousness and mental disturbance may be only partial. Nausea or sickness at the stomach often precedes the onset. Convulsions may occur.

Sunstroke must be carefully distinguished from heat exhaustion, in which the general symptoms are similar to those of sunstroke, but the bodily temperature is below the normal. The difference can be at once recognized by feeling the skin underneath the clothing; in sunstroke the skin feels burning hot, in heat exhaustion it is cold.

#### TREATMENT.

1. Carry the patient into a cool and shaded place where there is plenty of pure, fresh air.

2. Strip his clothing to the waist and place him in a recumbent position.

3. Pour cold water (ice water is best) upon his head and chest until consciousness returns. The points at which the blood may be most effectually cooled are the wrists, the temples and the ears, because at those points it approaches the surface more nearly in considerable quantities. Ice may be applied to the head and chest and rubbed over the body, but if the skin is cold no ice should be applied. Internally small doses of brandy may be administered with success, but in all cases of sunstroke the patient should, as soon as possible, be placed in charge of a competent physician.

The patient should do no mental work for some months and should keep free from all excitement. Persons who have once suffered from sunstroke are liable to a second attack. Insanity, in some of its varied forms, frequently follows sunstroke.

In heat exhaustion give alcoholic stimulants and place the patient in a hot bath so as to raise the bodily temperature.

[Circular No. 33.]

**2. SCHOOL HYGIENE.**

Addressed to School Directors, Controllers and Trustees.

**I. SELECTION OF A SITE FOR A SCHOOL.**

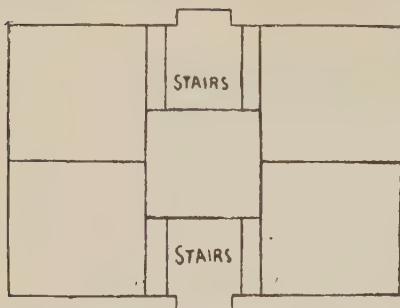
For a school house it is desirable to secure the healthiest possible site in the district where the school is to be located. Pure air and sunlight in abundance are to be sought, while foul air and dampness are to be avoided. In the country a damp soil and the region of wet-weather ponds is always to be avoided. A hillside, because it is dryer and warmer, is better than a hollow or than the top of a hill if the latter is exposed to cold winds. In towns it is not necessary to locate the school house on a principal street; a quiet side street is preferable. It should be located away from offensive industries as gas works, tanneries, oil refineries, etc., while the school lot should be so large that two sides have the adjacent buildings at least sixty feet distant, and in both town and country a play ground as large as possible should be secured. This should be on the south and west sides of the school buildings rather than on the north. If in cities it is not otherwise possible to secure a play ground one should be made in the cellar, or even on the roof, or possibly in both places, one being assigned to the boys, the other to the girls where both sexes are in the same school.

The school grounds may be planted with trees, but these *should not overshadow the buildings*, thus producing dampness, nor should they be permitted to darken the windows. In the country wind-breaks of ever-green trees may be planted on the north or northwest side of the building, in some localities on the southeast, to protect them from the cold winds coming from those directions. To secure a large lot it would, in towns, be well to go to the suburbs rather than to build in the seemingly most convenient spot. In country places children frequently walk one, two, and even more miles to school, and it would seem that in towns and cities where there are well-kept sidewalks children could do as much when necessary. In fact it would be much better for their health if they were compelled to walk at least a mile before school every morning. It is a matter of surpassing importance that there be a considerable area of open ground about every school house, and great exertions should be made to secure it.

**II. PLANS FOR A SCHOOL BUILDING.**

No committee should erect a new school building without the most careful consideration and study of improved school house plans. A cellar should be made under the whole building and should be at least half above ground, with good large windows and a cemented floor. It could

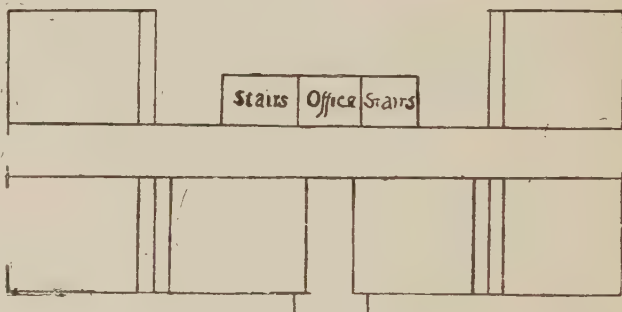
then be used for a play room in wet weather. If there is no cellar there should at least be an air space under the building for ventilation.



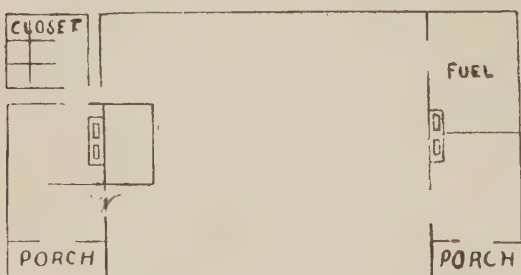
No. 1.—Plan of School Building to give maximum of light in each room. (From Lincoln's Sanitary Conditions of School Houses9)

The walls within should be "furred out," that is, have the plastering put on lath not directly on the walls. This makes the building dryer and warmer. The rooms should not be in the form of squares but of paral-

lelograms, and not over forty feet by twenty-four feet in area. A better size is thirty-three feet by twenty-one, this being the greatest distance rooms that can be well lighted and pupils see across



to blackboards, etc. Ceilings should be about thirteen to fourteen feet high, not more. The walls should be whitewashed or painted, never papered.



No. 3.—Plan for Single-roomed School. (Lincoln.)

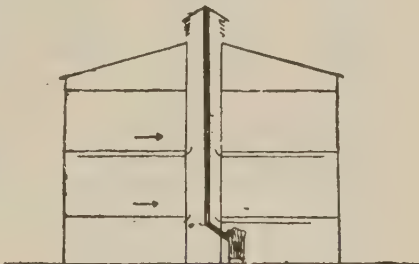
Buildings should be so faced that the sun can enter every room. All exterior decorations which cut off the light are to be avoided. The floors should be of hard wood, oiled and free from splinters. The cloak rooms should have good means of ventilation and should be lighted. Staircases should be fire-proof, with rails on each side, without any winding, every tread being full size. There should be a staircase for every fifty pupils. Doors should open outward and should be of good width. For country schools, and for all schools on large lots it is probably best to face the building to the east or west. This will bring the windows to the north and south, which, generally, will give the best results in lighting the room.

*Heating and Ventilating.*

A proper degree of warmth and pure air are absolutely essential in all school rooms. The effort should always be made to secure ventilation in connection with the heating of a building, as this is best and least expensive.

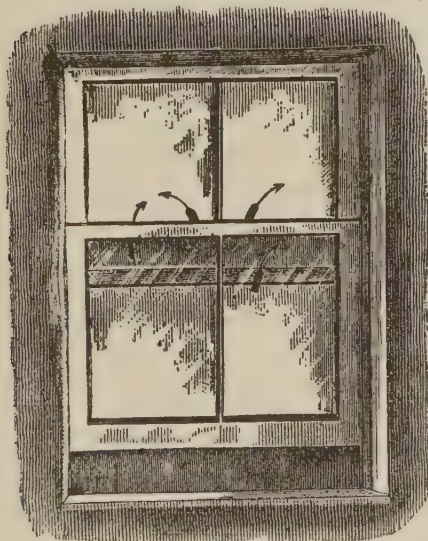
Steam heat is the most convenient and most cleanly, but generally there is no ventilation accompanying it. If so it is to be rejected. Except in large towns or cities, heating must be done by stoves or by heaters placed in the cellar. Good results may be obtained from either.

From 68° to 70° Fahrenheit is about the proper temperature for a school, and this should be determined by a thermometer, which every school room should possess. The stove or furnace should be large enough to heat without being made "red hot." Ventilating shafts, in order to be efficient, *must be heated*; they should be not less than eight inches square on the inside and made smooth, preferably of metal. A card of instructions to teachers in reference to heating and ventilation should hang in each school room. For drying the children's feet a large, flat piece of iron, resting directly upon a steam coil placed in the halls, is excellent.



A simple plan of ventilation by means of one central shaft is given in the cut. About two thousand feet of fresh air per hour to each pupil is needed.

An open fire-place, with a small fire burning in it, is the best means of ventilating a room yet devised. A ventilating flue, in order to act, must be warm, otherwise it will probably only be a funnel down which cold air will pour into the room. Windows should not be lowered in cold weather when a draught of cold air may fall upon the head of any pupil. Much fresh air may be introduced into a room by placing boards or strips of muslin about six inches wide under

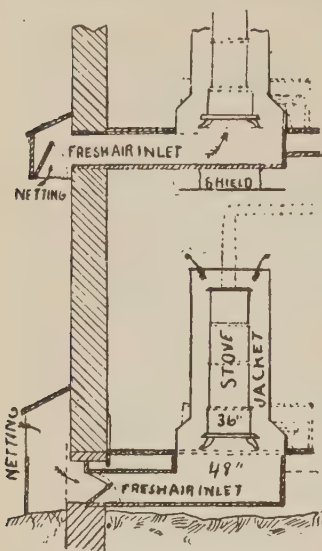


Showing manner of ventilating by inserting strip of wood beneath lower sash of window.

the lower sash of each window in the room. A space will be formed between the two sashes through which a stream of air will enter the room.



Another plan is to have a cylinder of zinc enclosing the stove. A



hole is made in the floor underneath the stove, and from this hole a piece of stove-pipe leads to the external air. The air about the stove will become heated and will arise, while to take its place a constant stream of air will pour into the space about the stove from outdoors. This air will be warmed before it passes into the room. It will be well for the teacher to have *fixed times on the daily programme at which to throw open doors and windows several times each day that all the stagnant air may be removed from the room.* At these times all the children should be on their feet exercising, and the windows should be closed some minutes before the children take their seats in cold weather. All win-

dows should be made so that they can be lowered. This especially applies to one-roomed country schools. Foul air produces listlessness in schools perhaps more than any other one cause.

"In modern hygiene nothing is more conclusively established than the fact that vitiated atmospheres are the most fruitful sources of disease."—PLAYFAIR.

"Headache, nausea and lassitude, great debility, impaired digestion, severe colds, consumption and other diseases of the respiratory system, as well as other serious diseases, may be caused by confinement in the foul atmosphere of an unventilated room."—DR. FRANK WELLS.

"Though foul air is a slow poison, we must not forget that a blast of cold air may slay like a sword."—DR. ANGUS SMITH.

Foul air poisons the blood and dulls the operations of the brain, hence good work cannot possibly be done in an ill-ventilated school room. The teacher will become impatient and petulant, the children dull and listless. Hence it is clear that *much attention* should be given to securing pure air in all school rooms.

### *Lighting.*

Great pains should be taken to secure a well-lighted building. The building should stand alone, no other building being nearer than sixty feet, and if very high still more distant. The rooms should not be much over 33 feet by 21 feet. Window space should equal one-fourth to one-fifth of the floor space, placed on two sides of the room, and should extend to the ceiling, and the lower sill should not be nearer than four feet from the floor. It is the rule that windows are much too small. Cur-

tains, if any are permitted, should have the roller at the bottom. Teachers should not be permitted to obstruct the windows with curtains, flowers, or any other objects.

To keep out heat, blinds on the *outside of the glass* are much the best. Pupils should never be required to face the light; and the light is best when it comes from behind and over the left shoulder.

Walls are best of light gray color; ceilings white. Dark paint or dark paper should never be used on the walls of school rooms. It is best not to use paper at all. Blackboards should not be placed between windows, where pupils must face the light in reading from them.

Books with good paper and good print should be used, and no others. This applies to books of reference and supplementry readers, as well as to the books considered as the more regular text-books.

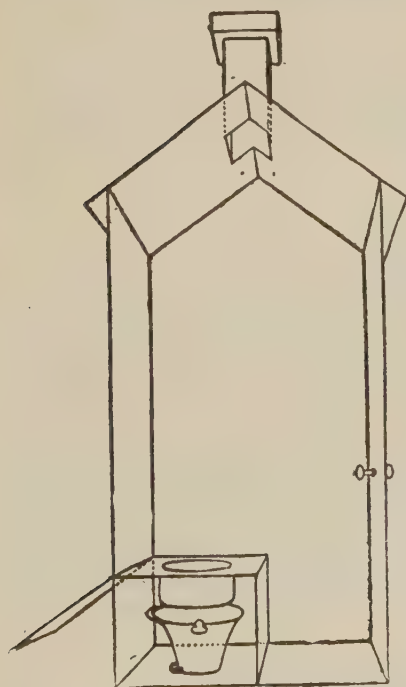
It would be well for directors and school trustees to have hanging on the walls of every school room plain rules for the prevention of injuries to the eyesight.

### *Water Supply and Drainage.*

Growing boys and girls need much water, hence, every school house

should have a good supply. In country places the well should be at least 200 feet from the privy. The well should be cleaned out at the opening of each school term, and the purity of the water tested. Each child (or at least the children from one family) should have his own glass or tin cup for drinking purposes. In country places a wash basin, and in towns a hydrant, but no towel or soap, should be supplied the pupils. This last precaution is made necessary from the danger of spreading contagious diseases, where the same towels, etc., are used promiscuously.

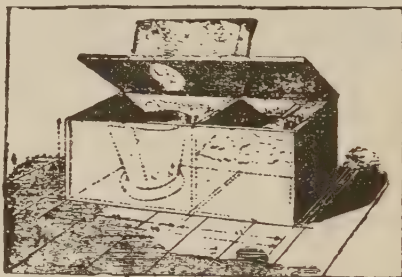
The privies should be absolutely distinct for each sex "out of sight and out of mind" each from the other. There should be as little wood-work as possible about them, and they should be well ventilated and well lighted. In country places, some form of the earth closet should



Convenient Closet, Pail System.

always be adopted in preference to the dangerous privy vault. Dry

paths should lead to the closets, so that in damp weather pupils need not wet their feet in visiting them. In towns, when the water closet is used, they should be constructed in the best possible manner. The floors should be of slate or asphalt, because these absorb no moisture. The urinals should not be of metal or of stone, but of glazed ware, as this can be kept clean most easily. The hopper closet is much to be preferred to the basin closet. It is much better to place the closets outside the school building, rather than in the cellar, as in the latter there will be always some danger from foul gas, and they will need constant watching. Sewage from a school (as from all other buildings) should always be purified before being thrown into a stream, in order to avoid the contamination of water supplies. Human excreta are poisonous to human beings when again taken into the system; besides, they often contain the germs of fatal diseases, like typhoid fever, cholera, dysentery, etc., for which reasons care should always be taken to keep them from all water supplies.



Convenient form of earth closet for teacher's use. May be placed in any small room.

#### *School Furniture.*

The desks should be carefully selected and arranged, the following points being in mind:

1. The pupils should not face the light.
2. The desks should be neither too high nor too low.
3. The top should slope to the pupil, and not be flat.
4. The seat should be comfortable, with a support for the back, curved in to fit the hollow of the back, and not too far from the desk.
5. In every room for, say thirty to fifty pupils, there should be three sizes of desks. Foot rests should be supplied for those whose feet do not reach the floor.

The blackboards should be large, the surface dull, never varnished, and they should not be placed between windows. All wall maps and charts should be on a large scale, with figures and large letters. Teachers should be instructed to write in a bold hand, putting on plenty of chalk. The boards should be kept clean. Soap and towels should not be furnished the pupils, as through their use contagious diseases may spread among the pupils.

#### GENERAL CLEANLINESS OF PREMISES.

Every portion of school premises should be daily inspected by the teacher and kept in a cleanly condition. Special attention should be given to the cellar, urinals and water closets. The cellar should not be

used to store litter in, should be frequently whitewashed, and, if need be, disinfected. The urinals and closets should be frequently disinfected, and the aim should be to permit no odor to arise from these places. Green vitriol, a pound to a pail of hot water, is an excellent disinfectant for such places. Neighboring streets, alleys and premises should also be reported to the health officers whenever not in a healthful condition.

#### THE HOURS OF STUDY.

It is a general belief that American children are being overworked in the schools, and that their bodies are suffering from the confinement of the school room. Possibly children would advance just as rapidly in their studies were they in school no more than half as long each day as they now are. The following schedule may be an aid in making school programmes: "Children seven to eight years old may be in school two hours a day; from eight to ten years old, three to three and a half hours; from ten to twelve, four to four and a half hours; twelve to fifteen years, five to six hours; and fifteen to eighteen years old, seven to eight hours." This schedule suggests a fair average of school hours, and includes *all* the time children of the indicated ages may profitably spend over their books. More time than this will probably be at the expense of their physical health. Pupils should have their meals at regular hours. They should not be overtaxed in "preparing for examination."

Sound bodies are of so great importance to the rising generation that the attention of directors is especially called to this topic. In case of ungraded schools, the younger children should positively not be confined to the school room as many hours as the older ones.

#### CONTAGIOUS DISEASES.

All children should be vaccinated before being admitted to school. All pupils suffering from diphtheria, scarlet fever, small-pox, varioloid, measles, or contagious diseases of the eye or skin, ought to be excluded from school until pronounced cured and innocuous to other children. When any of the above diseases are in a family, all the children of that family should be excluded from school so long as danger of communicating the disease exists. Teachers should be required to report all cases of contagious diseases in their schools to the health officer or burgess. When any of the above diseases are epidemic in a community, the schools ought to be closed until the disease subsides. The following statement of periods of infectiousness, taken from Able's school hygiene, may be of value.

##### *Periods of Infectiousness of Contagious Diseases.*

*Small-Pox.*—Six weeks from the commencement of the disease, if every scab has fallen off

*Chicken-Pox.*—Three weeks from the commencement of the disease, if every scab has fallen off.



*Scarlet Fever.*—Six weeks from the commencement of the disease, if peeling has ceased and there is no sore nose.

*Diphtheria.*—Six weeks from the commencement of the disease, if sore throat and other signs of the disease have disappeared.

*Measles.*—Three weeks from the commencement of the disease, if all rash and the cough have ceased.

*Mumps.*—Three weeks from the commencement of the disease, if all swelling has subsided.

*Typhus.*—Four weeks from the commencement of the disease, if strength is re-established.

*Typhoid.*—Six weeks from the commencement of the disease, if strength is re-established.

*Whooping-Cough.*—Six weeks from the commencement of the disease, if all cough has ceased

Under judicious treatment the period of infectiousness may be considerably shortened, but *no child suffering as above should be admitted to any school after a shorter period of absence, and should be provided with a medical certificate, that he or she is not liable to communicate the disease.*

#### *Length of Quarantine.*

Teachers or children *who have been exposed* to infection from any of the following diseases may safely be re-admitted to the school, if they remain in good health (and have taken proper means for disinfection) after the following periods of quarantine:

Diphtheria, . . . . . 12 days.

Scarlet fever, . . . . . 14 "

Small-pox, . . . . . 18 "

Measles, . . . . . 18 "

Chicken-pox, . . . . . 18 "

Mumps, . . . . . 24 "

Whooping-cough, . . . . . 21 "

} Adults may be readmitted immediately, if they disinfect their clothes and person.

No quarantine is necessary in case of exposure to typhoid fever.

The following rules, formulated by the State Board of Health of Wisconsin, we think ought to prevail throughout this state:

*Rule 1.* No person infected with any contagious or infectious disease, dangerous to the public health, shall be admitted into any public or private school within the jurisdiction of this board.

*Rule 2.* No parent, guardian, tutor or other person having charge or control of any child or children shall allow or permit any such child or children to go from any building infected with scarlet fever, diphtheria, cholera, small-pox or other contagious or infectious disease, dangerous to public health, to attend any public or private school within the jurisdiction of this board.

*Rule 3.* No parent, guardian, tutor or other person within the jurisdiction of this board, having charge or control of any child or children,

shall allow or permit such child or children to go from any house or building infected with scarlet fever, diphtheria, cholera, small-pox or other contagious or infectious disease, to attend any public school, church, or place of amusement, or to travel in any public vehicle.

*Rule 4.* No person within the jurisdiction of this board shall be allowed or permitted to go from any house or building infected with scarlet fever, diphtheria, cholera, small-pox or other contagious diseases dangerous to the public health, to attend any public school, church or place of amusement, or to travel in any public vehicle.

#### SUGGESTIONS TO COUNTY SUPERINTENDENTS.

[From Report of Wisconsin State Board of Health.]

In conclusion we advise that the following important recommendations be addressed to the county superintendents of the state, who are urged to present them to the attention of every school district board, to the end that our schools be placed in good sanitary condition :

*Rule 1.* To clean and perfect all sources of water supply, and, where schools have no water supply of their own, to furnish such.

*Rule 2.* In the absence of a better system, to prepare the windows and transoms, so that ventilation can be had without causing drafts, and that all schools introduce improved ventilating systems as soon as possible.

*Rule 3.* To place buildings in good repair, with tight floors, good roofs and underpinning.

*Rule 4.* To see that the grounds do not permit standing water, and to prepare gravel or board walks to keep the children's feet out of the mud.

*Rule 5.* Suitable water-closets for each of the sexes should be provided with every school house. They should be situated far enough away to secure privacy, be kept in good repair and cleaned and disinfected at least twice a month.

*Rule 6.* The rooms should be so warmed as to maintain an even temperature, and all be kept comfortable ; stoves and furniture should be safe and in good order.

*Rule 7.* Rooms should not be overcrowded ; not less than 15 square feet of floor space and 215 cubic feet of air space should ever be allowed to each pupil.

*Rule 8.* Blackboards should not be placed between windows ; the surface should be dead black, not glossy.

*Rule 9.* The light should, if possible, be admitted from the rear, or rear and left of the pupil—never from the front.

*Rule 10.* Desks and seats of different heights should be furnished to suit the size and age of pupils.

## SCHOOL HEALTH OFFICERS.

In the ideal state, each school will have its own health officer, who will look after the construction, warming, ventilating and lighting of the school buildings. He will also examine each pupil at stated periods, and will have a general oversight of the sanitary condition of the school buildings and the health of each pupil. He may propose to boards sanitary rules, and give teachers instruction in hygiene. It is earnestly urged upon boards of control that these health officers be selected and set to work at the earliest practicable moment.

## BOOKS OF REFERENCE.

The following books are valuable :

School Hygiene.—Six lectures delivered before the teachers of Boston. Price 80 cents. Ginn & Co., publishers, Boston, Mass.

School and Industrial Hygiene.—By Dr. C. H. Lincoln. Published by P. Blakiston, Son & Co., Philadelphia, Pa., at 50 cents.

Text Book of Hygiene.—By Dr. A. Wilson. Published at \$1, by P. Blakiston, Son & Co., of Philadelphia, Pa. This is one of the best works on hygiene now accessible to teachers. They will find it a store-house of knowledge on which to draw for plain talks in the school room.

School Hygiene.—Dr. A. Newsholme. D. C. Heath & Co., Boston. Price 50 cents.

The Sanitary Conditions and Necessities of School Houses and School Life.—D. F. Lincoln, M. D. Lomb Prize Essay.

Rural School Architecture.—Circular of Information No. 4, issued by the Commissioner of Education, Washington, D. C.

School Hygiene.—By W. J. Abel. Longman, Green & Co., publishers. \$1.00.

School Hygiene, No. 1, Addressed to Teachers.—Circular of Pennsylvania State Board of Health ; to be had free, of the secretary, in Philadelphia, Pa.

## PRECAUTIONARY AND HYGIENIC CIRCULARS ISSUED BY THE STATE BOARD OF HEALTH OF PENNSYLVANIA :

No. 7. Precautions against cholera, cholera infantum, cholera morbus, summer diarrhoea and dysentery.

No. 8. Precautions against small-pox.

No. 18. Precautions against typhoid fever.

No. 19. Precautions against diphtheria.

No. 20. Contagious and infectious diseases.

No. 20. Contagious and infectious diseases (German).

No. 21. Precautions against scarlet fever.

No. 22. Precautions against trichinosis.

No. 24. Recommendations in regard to the care of infants.

No. 25. The importance of caution and precision in the diagnosis of typhoid fever, with description of a cheap and convenient earth closet.

No. 26. School hygiene, addressed to teachers.

No. 28. Precautions against consumption.

No. 29. The danger arising from public funerals of those who have died from contagious and infectious diseases. Addressed to the clerical profession.

No. 30. The disposal of the sewage of public edifices. Addressed to the trustees and managers of public institutions.

No. 31. Precautions to be adopted by funeral directors to prevent the spread of contagious and infectious diseases.

No. 32. Precautions against sunstroke.

No. 33. School hygiene, No. 2. Addressed to school directors and trustees.

Any of the above circulars may be obtained on application to Dr. Benjamin Lee, secretary of the State Board of Health, 1532 Pine street, Philadelphia, enclosing a two cent postage stamp. The postage for the entire series enclosed in a substantial box envelope is four cents.

GEORGE G. GROFF, M. D.

*Chairman Committee on School Hygiene.*

BENJAMIN LEE, M. D.

*Secretary.*



## APPENDIX K.

## ORGANIZATION, CONSTITUTION, BY-LAWS AND REGULATIONS OF THE BOARD. COMPENDIUM OF THE LAWS RELATING TO PUBLIC HEALTH AND SAFETY.

Appendix A. Laws passed at the Session of 1889.

Appendix B. Laws passed at the Session of 1891, with the general statute of public nuisances.

## State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, 1891.

## OFFICERS AND MEMBERS.

*President*—James H. McClelland, M. D., of Pittsburg.

*Secretary*—Benjamin Lee, M. D., of Philadelphia.

*Members*—Pemberton Dudley, M. D., 1338 North Fifteenth street, Philadelphia; Joseph F. Edwards, M. D., corner Sixteenth and Chestnut streets, Philadelphia; J. H. McClelland, M. D., 411 Penn avenue, Pittsburg; Howard Murphy, C. E., 326 Walnut street, Philadelphia; George G. Groff, M. D., Bucknell University, Lewisburg; Hon. Samuel T. Davis, M. D., 134 North Prince street, Lancaster; Benjamin Lee, M. D. 1532 Pine street, Philadelphia.

*Place of Meeting*—Supreme Court Room, State Capitol, Harrisburg (unless otherwise ordered). *Janitor*—John Harner, 1417 North Third street, Harrisburg.

*Time of Meeting*—Second Thursday in May, July and November, at 4 p. m.

## STANDING COMMITTEES.

I. *Executive Committee*—Pemberton Dudley, M. D., chairman; Howard Murphy, C. E., Joseph F. Edwards, M. D., and Benjamin Lee, M. D., secretary. Place of meeting: Executive office, 1532 Pine street, Philadelphia. Secretary's address: 1532 Pine street, Philadelphia.

II. *Committee on Registration and Vital Statistics*—Dr. Benjamin Lee and Dr. Samuel T. Davis. Bureau of Registration of Vital Statistics: Department of Internal Affairs, State Capitol, Harrisburg. State Superintendent of Registration of Vital Statistics: Benjamin Lee, M. D. Registrars of Marriages: All clerks of orphans' courts. Registrars of Practitioners of Medicine and Surgery: All prothonotaries.

III. *Committee on Preventable Diseases, Disinfection and Supervision of Travel and Traffic*—Dr. Joseph F. Edwards and Dr. Pemberton Dudley.

IV. *Committee on Water Supply, Drainage, Sewerage, Topography and Mines*--Mr. Howard Murphy, C. E., and Dr. George G. Groff.

V. *Committee on Public Institutions and School Hygiene*—Dr. George G. Groff and Mr. Howard Murphy, C. E.

VI. *Committee on Adulterations, Poisons, Explosives and other Special Sources of Danger to Life and Limb*—Dr. Pemberton Dudley and Dr. Joseph F. Edwards.

VII. *Committee on Sanitary Legislation, Rules and Regulations*—Dr. Samuel T. Davis and Dr. Pemberton Dudley.

The president is a member *ex-officio* of all committees.

*Medical Inspectors of the Board.*

| DISTRICTS.        | COUNTIES.                                                                 | INSPECTORS.                          |
|-------------------|---------------------------------------------------------------------------|--------------------------------------|
| Delaware, . . . . | { Philadelphia, Delaware, Chester, }<br>{ Montgomery and Bucks, . . . . } | Dr. W. B. Atkinson,<br>Philadelphia. |
| Lehigh, . . . .   | { Lehigh, Northampton, Carbon and }<br>{ Monroe, . . . . }                | Dr. Chas. McIntire, Jr.,<br>Easton.  |
| Wyoming, . . .    | { Luzerne, Wyoming, Pike, Lacka- }<br>{ wanna, Wayne and Susquehanna, }   | Dr. L. H. Taylor,<br>Wilkesbarre.    |
| Susquehanna, . .  | Lancaster, York and Dauphin, . . .                                        | Dr. P. A. Hartman,<br>Harrisburg.    |
| Schuylkill, . . . | Berks, Lebanon and Schuylkill, . .                                        | Dr. W. Murray Weid-<br>man, Reading. |
| Northumberland,   | { Northumberland, Union, Snyder, }<br>{ Montrose and Columbia, . . . . }  | Dr. Wm. Leiser, Jr.,<br>Lewisburg.   |
| Lycoming, . . .   | { Lycoming, Tioga, Potter, Bradford }<br>{ and Sullivan, . . . . }        | Dr. E. D. Payne,<br>Towanda.         |
| Cumberland, . .   | { Cumberland, Adams, Franklin and }<br>{ Perry, . . . . }                 | Dr. R. L. Sibbet,<br>Carlisle.       |
| Juniata, . . . .  | Juniata, Mifflin and Huntingdon, .                                        | Dr. A. B. Brumbaugh,<br>Huntingdon.  |
| Central, . . . .  | Center, Clearfield, Clinton and Blair,                                    | Dr. C. B. Dudley,<br>Altoona.        |
| Western Slope, .  | { Jefferson, Elk, Cameron, McKean }<br>{ and Clarion, . . . . }           | Dr. Spencer M. Free,<br>Beechtree.   |
| Southern Tier, .  | { Fulton, Bedford, Somerset and Fay- }<br>{ ette, . . . . }               | Dr. J. S. Hackney,<br>Uniontown.     |
| Allegheny, . . .  | { Allegheny, Washington, Greene, }<br>{ Butler, Beaver and Lawrence, . }  | Dr. J. R. Thompson,<br>Pittsburg.    |
| Lake, . . . . .   | { Erie, Crawford, Warren, Mercer, }<br>{ Venango and Forest, . . . . }    | Dr. A. A. Woods,<br>Erie.            |
| Conemaugh, . .    | { Cambria, Westmoreland, Indiana }<br>{ and Armstrong, . . . . }          | Dr. W. E. Matthews,<br>Johnstown.    |

CONSTITUTION, BY-LAWS AND REGULATIONS OF THE STATE  
BOARD OF HEALTH AND VITAL STATISTICS OF THE COM-  
MONWEALTH OF PENNSYLVANIA.

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Constitution.

The Constitution of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania is the act of legislature establishing the board, approved June 3, 1885, of which the following is the correct text:

AN ACT.

To establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth.

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manner of appointment. | persons, a majority of whom shall be physicians of good standing, graduates of regularly chartered and legally constituted medical colleges, and of not less than ten years' experience in the practice of their profession, and one of whom shall be a civil engineer, who, together with the secretary, the mode of whose appointment is hereinafter provided for, shall constitute and be designated as the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania. Of the six persons first appointed, two shall serve for two years, two for four years, and two for six years, from the first day of July next following their confirmation; and the Governor shall thereafter biennially appoint, by and with the advice and consent of the Senate, two persons, of the same professions as those whose terms of office have just expired, to be members of said board, to hold their offices for six years from the first day of July next following their confirmation, and until their successors are appointed, excepting the secretary, who shall continue in office as hereinafter provided; but any member may be re-appointed. Any vacancy occurring in said board during a recess of the legislature shall be filled by the Governor until the next regular session of the same. |
| Number of members.     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Term of service        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

SECTION 2. As soon as possible after the appointment of the first six persons as aforesaid, they shall meet in the office of the Secretary of the Commonwealth, and shall proceed, under the direction of the latter officer, to determine, by lot, which of them shall serve for the respective terms of two, four and six years. Before entering upon the duties of the office, they shall take the oath prescribed for state officers by the constitution of the state, and shall file the same in the office of the Secretary of the Commonwealth, who, upon receiving the said oath of office, shall issue to each a certificate of appointment for his respective term of office determined as aforesaid; upon receiving which they shall possess and exercise the powers, and perform the duties, of said board as defined in this act. Immediately after having taken the oath of office, they shall organize by electing one of their number to be president, and by appointing a proper person, who shall be a physician of good standing, of not less than ten years' professional experience, and a graduate of a legally constituted medical college, to be secretary of said board, who shall hold his appointment until removed by the appointment of his successor or otherwise. The board may elect one of its own members secretary, in which case the vacancy thus created shall be filled by the Governor in the same manner as a vacancy caused in any other way. The president shall be elected annually. No member of the board except the secretary shall, as such, receive any salary; but the actual travelling and other expenses of any member while engaged on the actual duties of the board, shall be allowed and paid on presentation to, and approval by, the Auditor General of an itemized account with vouchers annexed.

Manner of organization.

Appointment of secretary.

Actual expenses of members to be paid.

SECTION 3. The secretary shall be the executive officer of the board, and shall have all the powers and privileges of a member of said board, except in regard to voting upon matters relating to his own office and duties as secretary. He shall receive an annual salary of two thousand dollars, which shall be paid him in the same manner that salaries of other state offices are paid; and such necessary expenses as the Auditor General shall audit, on presentation of an itemized account with vouchers annexed and the certificate of the board, shall be allowed him.

Duties of secretary.

Salary of secretary.

SECTION 4. The said board shall meet at least once every six months, and may also hold special meetings as frequently as the proper and efficient discharge of its

Time and place of meetings.



duties shall require, in the capitol building at Harrisburg (unless otherwise ordered), and the rules and by-laws of the board shall provide for the giving of proper and timely notice of all such meetings to every member of the board. The Secretary of Internal Affairs shall provide and furnish such apartments and stationery as said board may require in the discharge of its duties. A majority of the members of the board shall, at any regular, called or adjourned meeting, organize and constitute a quorum for the transaction of business.

Duties and function  
of board defined.

SECTION 5. The State Board of Health and Vital Statistics shall have the general supervision of the interests of the health and lives of the citizens of the commonwealth, and shall especially study its vital statistics. It shall make sanitary investigations and inquiries respecting the causes of disease, and especially of epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employments, conditions, habits, food, beverages and medicine, on the health of the people. It shall also disseminate information upon these and similar subjects among the people. It shall, when required by the Governor or the legislature, and at such other times as it deems it important, institute sanitary inspections of public institutions or places throughout the state. It shall codify and suggest amendments to the sanitary laws of the commonwealth, and shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases.

Powers of board

SECTION 6. In cities, boroughs, districts and places having no local board of health, or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative, the State Board of Health shall have power and authority to order nuisances, or the cause of any special disease or mortality, to be abated and removed, and to enforce quarantine regulations as said board shall direct.

Penalty for viola-  
tion and neglect.

Any person who shall fail to obey, or shall violate, such order shall, on conviction, be sentenced to pay a fine of not more than one hundred dollars at the discretion of the court.

Functions of board  
in registration

SECTION 7. It shall be the duty of the State Board of Health and Vital Statistics to have general supervision of the state system of registration of births, marriages and deaths, of prevalent diseases, and of practitioners of medicine and surgery, to prepare the necessary methods,

forms and blanks for obtaining and preserving such records and to insure the faithful registration of the same in the several counties and in the Central Bureau of Vital Statistics at the capitol of the state. The said board shall recommend such forms and amendments of laws as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the state. The secretary of the State Board of Health and Vital Statistics shall be the superintendent of registration of vital statistics as supervised by said board; the clerical duties and safe-keeping of the bureau of vital statistics thus created shall be provided for by the Secretary of Internal Affairs, who shall also provide and furnish such apartments and stationery as said board shall require in the discharge of such duties.

Secretary of Internal Affairs to provide stationery and apartments.

SECTION 8. It shall be the duty of all health officers and boards of health in the state to communicate to said State Board of Health copies of all their reports and publications, and also such sanitary information as may be requested by said board. And said board is authorized to require reports and information (at such times, and of such facts, and, generally, of such nature and extent as its by-laws or rules may provide) from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals and officers thereof, and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees and occupants of all places of public resort in the state; but such reports shall only be required concerning matters or particulars in respect of which it may, in its opinion, need information for the proper discharge of its duties.

Local boards of health and institutions to report to board.

SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relative thereto. But no more than two thousand dollars shall be expended in any one year for such special sanitary service.

Scientific investigations

SECTION 10. It shall be the duty of said board, on or before the first Monday of December in each year, to make a report in writing to the Governor of this State upon the sanitary condition and prospects of the state; and such report shall set forth the action of the said board and its officers and agents, and the names thereof, for the past

Annual report.

So in P. L., probably  
a mistake of trans-  
criber.

year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health; and the annual report of said board shall also contain a detailed statement of the (State) Treasurer of all moneys paid out by or on account of said board, and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of five thousand dollars in any one year.

Appropriation.

SECTION 11. The sum of ten thousand dollars (\$10,000) is hereby appropriated from the treasury for the purposes of this act and the expenditures properly incurred by the authority of said board and verified by affidavit, subject, however, to the limitations hereinbefore imposed, and shall be paid by the treasurer upon the warrant of the Auditor General.

SECTION 12. This act shall take effect immediately, and all acts or parts of acts inconsistent herewith shall be, and are hereby, repealed.

APPROVED—June 3, 1885.

ROBT. E. PATTISON.

#### AN ACT

To regulate the publication, binding and distribution of the public documents of this commonwealth.

SECTION 1. *Be it enacted, etc.,* That from and after the passage of this act the printing, binding, distribution and number of the several public documents of this commonwealth shall be as follows, to-wit:

XIX. Five thousand copies of the annual report of the State Board of Health and Vital Statistics be printed annually, four thousand to be bound in muslin and one thousand in paper; seventeen hundred and fifty thereof for the use of the House of Representatives, one thousand for the use of the Senate, seventy-five thereof for the use of the Governor, seventy-five thereof for the State Librarian for distribution and exchange with the states and territories, five hundred thereof for reserve work, and the remainder thereof for exchange and distribution by the State Board of Health.

APPROVED—The 16th day of April, A. D. 1887.

JAMES A. BEAVER.

### By-Laws.

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The By-Laws of the STATE BOARD OF HEALTH AND VITAL STATISTICS OF THE COMMONWEALTH OF PENNSYLVANIA are as follows:

#### ARTICLE I.

##### *Officers of the Board.*

SECTION 1. The officers of the board shall be a president and secretary, as directed by section two of the act establishing the board.

SECTION 2. All elections shall be by ballot.

#### ARTICLE II.

##### *Duties of Officers.*

SECTION 1. The president shall preside at the meetings of the board, preserve order, and perform such other duties as custom and parliamentary usage require. He shall be *ex-officio* a member of all committees.

SECTION 2. The secretary shall keep the records, and conduct the correspondence of the board. He shall be custodian of all books, documents, furniture and other property belonging to the board. He shall give proper and timely notice, in writing, of every regular and called meeting, to each member of the board, and shall, as executive officer, perform such other duties as are assigned by the act establishing the board, or by these by-laws, as the board may from time to time direct. All communications from the secretary to the board shall be in writing.

#### ARTICLE III.

##### *Meetings.*

SECTION 1. The regular meetings of the board shall be held on the second Thursday in May, July and November, at Harrisburg (unless otherwise ordered). At the meeting in July the election of officers shall be held. At the meeting in November the annual report shall be adopted, and at the meeting in May a public address on some sanitary topic shall be delivered.

SECTION 2. Special meetings shall be called by the president, at such time and place as he shall designate, whenever requested in writing by three members of the board, one of whom shall be the secretary.

SECTION 3. A majority of the members of the board shall at any regular, called or adjourned meeting, organize and constitute a quorum for the transaction of business.



## ARTICLE IV.

*Order of Business.*

SECTION 1. All meetings of the board shall be called to order at the appointed hour by the president. In the event of his absence a chairman *pro tempore* shall be appointed.

SECTION 2. At regular meetings the business shall be conducted as follows:

1. The secretary shall register the names of the members present.
2. The minutes of the last regular meeting shall be read.
3. The minutes of special meetings held since the last regular meeting shall be read.
4. Report of the secretary.
5. Reports of standing committees.
6. Reports of special committees.
7. At the meeting in July, nomination and election of a president for the ensuing year; at the meeting in November, appointment of standing committees.
8. Unfinished business.
9. New business.
10. Adjournment.

SECTION 3. At special meetings the following shall be the order of business:

1. Registration of names of members present.
2. Reading of minutes if called for.
3. Presentation of special subject.
4. Presentation of accounts.
5. Adjournment.

## ARTICLE V.

*Report of the Secretary.*

The secretary shall at the meeting in November make a full report of his official acts during the year ending October 1 preceding, and accompany the same with recommendation of such measures as he shall deem necessary for the preservation of the public health and the faithful execution of the law, and this report shall constitute the basis of the report of the board to be presented to the Governor on or before the first Monday of December in each year, in accordance with the requirements of section ten of the act constituting this board.

## ARTICLE VI.

*Standing Committees.*

SECTION 1. The following standing committees shall be appointed by the president of the board at the meeting in November:

1. An executive committee.
2. A committee on registration and vital statistics.
3. A committee on preventable diseases, disinfection and supervision of travel and traffic.
4. A committee on water supply, drainage, sewerage, topography and mines.
5. A committee on public institutions and school hygiene.
6. A committee on adulterations, poisons, explosives and other special sources of danger to life and limb.
7. A committee on sanitary legislation, rules and regulations.

SECTION 2. Such papers, communications or other matter received by the secretary, as he may deem proper for the purpose, he shall forward to the chairman of the appropriate committee, after filing the titles and memoranda, which shall be recorded in the secretary's office.

SECTION 3. All reports of committees shall be in writing.

## ARTICLE VII.

### *Finances.*

SECTION 1. All accounts against the board shall be filed with the secretary, and may be presented at any meeting of the board, when they shall be acted on in open session; and all accounts allowed shall be endorsed "Approved by order of the State Board of Health and Vital Statistics," and shall be endorsed by the president and secretary.

SECTION 2. The secretary shall record in a book reserved for that purpose, all accounts of expenditures ordered or made by the board and its several members, and shall, before presenting any bill, account or voucher to the Auditor General, cause a copy of the same to be recorded, and shall have stamped upon such voucher, account or bill the audit and date, as the executive committee shall provide.

## ARTICLE VIII.

### *Executive Committee.*

SECTION 1. The executive committee shall consist of not less than three members, including the secretary of the board, who shall be secretary of the committee.

SECTION 2. It shall have the general supervision of the finances, purchases, expenses and publications of the board.

SECTION 3. Its office shall be in the city of Philadelphia until otherwise ordered.

SECTION 4. It shall hold meetings at least quarterly, and as much oftener as it shall deem necessary, and shall meet on the call of the chairman.

SECTION 5. With the approval of the board or of the executive com-

mittee, the secretary shall make requisition upon the Secretary of Internal Affairs for such stationery, printed forms, clerical labor, apartments and furniture as shall be needed for the use of the board.

SECTION 6. No purchases shall be made or expenditure incurred except by order of the board or of the executive committee; and the executive committee shall not have power to incur any indebtedness beyond the amount appropriated by law.

#### ARTICLE IX.

##### *Rules of Order.*

In conducting the business of the meetings of the board, the parliamentary rules governing the legislature of the State of Pennsylvania shall be adopted so far as they are applicable to its deliberations.

#### ARTICLE X.

##### *Seal.*

The seal of the board shall be circular in shape, bearing on the circumference the words, ' State Board of Health. Pennsylvania. 1885. *Salus Populi Suprema Lex,*' and in the center the coat-of-arms of the commonwealth.

#### ARTICLE XI.

##### *Amendments.*

These by-laws may be altered or amended at any regular meeting of the board by a two-thirds vote of the members present.

## ORGANIZATION OF THE BOARD.

STATE BOARD OF HEALTH AND VITAL STATISTICS OF THE COMMON-  
WEALTH OF PENNSYLVANIA.

*Officers and Members.*

*President*—J. H. McClelland, M. D., of Pittsburg.

*Secretary*—Benjamin Lee, M. D., of Philadelphia.

*Members.*

Pemberton Dudley, M. D., of Philadelphia ; Hon. Samuel T. Davis, M. D., of Lancaster ; Joseph F. Edwards, M. D., of Philadelphia ; J. H. McClelland, M. D., of Pittsburg ; Howard Murphy, C. E., of Philadelphia ; George G. Groff, M. D., of Lewisburg ; Benjamin Lee, M. D., of Philadelphia.

*Place of Meeting*—Supreme Court Room, State Capitol, Harrisburg (unless otherwise ordered).

*Time of Meeting*—Second Thursday in May, July and November

*Executive Committee.*

*Members*—Pemberton Dudley, M. D., chairman, Howard Murphy, C. E., Joseph F. Edwards, M. D., and Benjamin Lee, M. D., secretary.

*Place of Meeting* (unless otherwise ordered)—Executive office, 1532 Pine street, Philadelphia.

*Time of Meeting*—Fourth Wednesday in February, May, August and November.

*Secretary's Address*—1532 Pine street, Philadelphia.

*Bureau of Registration of Vital Statistics*—Department of Internal Affairs, State Capitol, Harrisburg.

*State Superintendent of Registration of Vital Statistics*—Benjamin Lee, M. D.



## REGULATIONS OF THE BOARD.

(R. I.)

## REGULATIONS IN REGARD TO THE ABATEMENT AND REMOVAL OF NUISANCES.

Whenever a complaint is made in writing to the secretary of the board of the existence of a nuisance, he shall forthwith, as executive officer of the board, investigate the matter, and shall determine whether the alleged nuisance is detrimental to the public health, or the cause of an special disease or mortality; and in case he shall so find, then he shall notify the owner, agent or occupier of said premises, in writing, of such finding, and the executive office shall thereupon order and direct the abatement and removal of the same within — days; and in the event of the failure of said owner, agent or occupier of said property to abate and remove the nuisance, then the executive officer may proceed to abate and remove the same, and may employ all the force necessary to do so, and shall proceed by warrant, arrest and indictment to convict the party failing to obey said order of abatement and removal.

(R. II.)

## PROVISIONAL REGULATIONS FOR PREVENTING HOUSE YARDS, STREETS, SLAUGHTER HOUSES, STOCK YARDS, HOG PENS, BONE-BOILING AND FAT-RENDERING AND OTHER SIMILAR ESTABLISHMENTS FROM BEING OR BECOMING PREJUDICIAL TO THE PUBLIC HEALTH.

*Nuisances Defined.*

1. Whatever is dangerous to human life or health, and whatever renders soil, air, water or food impure or unwholesome, are declared to be nuisances and to be illegal, and every person having aided in creating or contributing to the same, or who may support, continue or retain any of them, shall be deemed guilty of a violation of these regulations.

*House-Refuse. Garbage, Etc.*

2. No house-refuse, offal, garbage, dead animals, decaying vegetable matter, or organic waste-substance of any kind, shall be thrown upon any street, road, ditch, gutter or public place, and no putrid or decaying animal or vegetable matter shall be kept in any house, cellar or adjoining out-buildings for more than twenty-four hours.

*Noxious Trades.*

3. No person or company shall erect or maintain any manufactory or place of business dangerous to life or detrimental to health, or where unwholesome, offensive, or deleterious odors, gas, smoke, deposit or exhalations are generated, within one mile of the limits of any city or borough, without the permit of the board of health or borough council of said city or borough, and all such establishments shall be kept clean and wholesome so as not to be offensive or prejudicial to public health, nor shall any offensive or deleterious waste-substance, refuse or injurious matter be allowed to accumulate upon the premises or be thrown or allowed to run into any public waters, stream, water-course, street, road or public place. And every person or company conducting such manufacture or business shall use the best approved and all reasonable means to prevent the escape of smoke, gases and odors, and to protect the health and safety of all operatives employed therein.

4. The business of bone and horse boiling shall not be allowed, unless conducted under cover, the building to be provided with smoke-consumers, and a due regard be had to cleanliness in the disposition of the offal. No bone-boiling establishment or depository of dead animals shall be kept or erected in any part of this commonwealth which is not under the jurisdiction of a local board of health, without a permit from the board of health or borough council of the nearest city or borough.

5. No permit shall be granted to any person or persons to carry on the business of boiling bones and dead animals until after a careful inspection of the locality, buildings and apparatus, and of the plans for conducting the business, by an accredited inspector of the State Board of Health, or, if such inspector be not accessible, then by an inspector appointed for the purpose by the board of health or borough council of the nearest city or borough.

6. No bone-boiling establishments or depositories of dead animals shall be kept or erected in or near to a thickly-inhabited neighborhood.

7. The floors of all bone-boiling establishments and depositories of dead animals shall be paved with asphalt or with brick or stone, well laid in cement, or with some other impervious material, and shall be well drained. All such establishments shall have such an adequate water supply as will enable thorough cleanliness to be maintained.

8. The boiling of bones and dead animals, etc., shall be conducted in steam-tight kettles, boilers or caldrons, from which the foul vapors shall first be conducted through scrubbers or condensers, and then into the back part of the ash-pit of the furnace fire, to be consumed, or by other apparatus equally efficient in preventing or counteracting the offensive effluvia.

9. When bones are being dried after boiling, they shall be placed in a close chamber, through which shall be passed, by means of pipes, large volumes of fresh air, the outlet pipe terminating in the fire-pit.

10. All proprietors of bone-boiling establishments not having, on the first day of July, 1886, permits to carry on the business, and violating these regulations, shall be liable to prosecution for failing to obey this order and also to an indictment at common law for creating and maintaining a nuisance.

11. The permit clerk of each local board of health or borough council shall have provided a book in which to enter the names of all persons engaged in the business of boiling bones and having depositories of dead animals; also, the location of works and appliances as reported by the inspector, whether licensed or not, the number and date of permit, and remarks.

12. No person or persons, without the consent of the board of health or borough council of the nearest city or borough, shall build or use any slaughter house within the limits of this commonwealth; and the keeping and slaughtering of all cattle, sheep and swine, and the preparation and keeping of all meats, fish, birds or other animal food, shall be in the manner best adapted to secure and continue their wholesomeness as food; and every butcher or other person owning, leasing or occupying any place, room or building wherein any cattle, sheep or swine have been or are killed or dressed, and every person being the owner, lessee or occupant of any room or stable wherein any animals are kept, or of any market, public or private, shall cause such place, room or building, stable or market, to be thoroughly cleansed and purified, and all offal, blood, fat, garbage, refuse and unwholesome and offensive matter to be removed therefrom at least once in every twenty-four hours after the use thereof for any of the purposes herein referred to, and shall also at all times keep all woodwork, save floors and counters, in any building, place or premises aforesaid, thoroughly painted or whitewashed; and the floors of such building, place or premises shall be so constructed as to prevent blood or foul liquids or washings from settling in the earth beneath.

13. No blood-pit, dung-pit, offal-pit or privy-well shall remain or be constructed within any slaughter house. Any one offending against this rule shall be guilty of creating and maintaining a nuisance prejudicial to the public health, and shall be required to remove the nuisance within ten days from the date of notice.

14. The owners, agents, or occupiers of all slaughter houses are required, during the months of June, July, August and September, to distribute twice in each week not less than twenty-five pounds of chloride of lime about the premises, and also to remove the contents of any manure-pit or manure-pile on the premises, once in each week, the said premises and contents of manure-pits being hereby declared to be nuisances prejudicial to the public health, unless subject to frequent disinfection and cleaning as herein indicated.

15. *All constables and supervisors are enjoined, and all citizens are respectfully desired, to give information to the State Board of Health of any violation of the health laws, or of the regulations of the board, so that the sanitary measures adopted by the latter to ensure the health of the people may be fully carried out, and all offenders promptly punished.*

NOTE.—Section six of the act of June 3, 1885, confers upon the State Board of Health power and authority to *order nuisances to be abated and removed in cities, boroughs, districts and places having no local board of health. Any person violating or failing to obey such order becomes liable, on conviction, to a fine of one hundred dollars.*

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(R. III.)

REGULATIONS IN REGARD TO THE SANITARY SUPERVISION OF TRAVEL  
AND TRAFFIC.

Upon satisfactory information of the approach to, or the transit through, the Commonwealth of Pennsylvania, of infected persons or goods, it shall be the duty of the secretary, as executive officer of the board, to cause the same to be stopped at the state line, or, if found within the limits of the state, to cause such persons or goods to be removed from cars, stages, vessels, boats or other conveyances, and securely isolated and disinfected; and he may, if, in his judgment, the emergency is such as to demand it, call a meeting of the "Committee on Travel and Traffic," to which his action shall be submitted, with his reasons therefor, in writing. But, in cases coming under the jurisdiction of national or municipal quarantine authorities, he shall co-operate with said authorities in all such action.

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(R. IV.)

REGULATION OF TRAVEL AND TRAFFIC.

REGULATIONS IN REGARD TO DISINTERMENT AND TRANSPORTATION OF DEAD  
BODIES.

*Disinterment of Bodies.*

*Rule I.* The removal of any body from its place of original interment is declared to be a nuisance dangerous to the public health, and is prohibited, unless the same be done under the direction and by permission of the local board of health or borough council.

*Rule II.* The above rule applies as well to the removal of a body from one grave or vault to another in the same cemetery as to its removal to another burial ground or place.



*Rule III.* The removal of dead bodies from any burial ground situated within the built-up portions of any city or borough is forbidden between April 1 and October 15.

*Rule IV.* The disinterment of the body of any person who died of any contagious or infectious disease is strictly prohibited, unless by special authority, and upon such conditions as the local board of health or borough council may impose.

*Transportation of Bodies.*

*Rule I.* The transportation of bodies of persons who shall have died from small-pox, Asiatic cholera, typhus fever, diphtheria or yellow fever is strictly forbidden.

*Rule II.* From October 15 to April 1, all other dead bodies may be transported without restriction, except those who shall have died of scarlet fever, typhoid fever or measles, which must be enclosed, as prescribed in Rule III.

*Rule III.* From April 1 to October 15, all dead bodies, when presented for transportation, must be enclosed in air-tight zinc, copper or lead-lined wooden boxes, or in air-tight iron caskets; or if in any other form of coffin, said coffin must be in a hermetically sealed box, enclosed in a manner satisfactory to the local board of health, health officer or borough council.

*Rule IV.* No person or article which has been exposed to the contagion can accompany the body.

*Rule V.* Every dead body must be accompanied by a physician's certificate of death, and a certificate from the shipping undertaker that the body has been prepared for transportation in accordance with the rules of the State Board of Health of the Commonwealth of Pennsylvania.

*Rule VI.* In receiving any dead body which has been shipped from beyond or within the States of New York, New Jersey, Delaware, Maryland, West Virginia or Ohio, or the Province of Ontario, the rules of the state or provincial boards of health of the same must be respected, and their transit permits will be honored without subjecting the body to delay, provided such rules do not conflict with any of the preceding rules in these regulations.

*Rule VII.* The following shall be the form of a transit permit for the transportation of a dead body within, into, or out of, the limits of the Commonwealth of Pennsylvania:

NOTE.—The rules and regulations of the State Board of Health are laws to be obeyed by every individual in the state.

Coupon No. 1, to Transit Permit of \_\_\_\_\_ who died at \_\_\_\_\_ the Carrier or Transportation Agent will tear off and keep this Coupon. If otherwise detached from the permit the Coupon must not be received. (See back of Permit.)

Coupon No. 2, to Transit Permit of \_\_\_\_\_ who died at \_\_\_\_\_ the Carrier or Transportation Agent will tear off this Coupon. If otherwise detached from the permit the Coupon must not be received. (See back of Permit.)

(The size of this permit without the stub is 10x4 inches)

FORM 7

Commonwealth of Pennsylvania,  
[To be issued by any State or Local Health Official.]

TRANSIT PERMIT. [For Public Carriers.]

R. R. Agents and all other Carriers see back of Permit

Office of.....County.  
.....

Permission is hereby given to remove the remains of  
aged....., who died at.....  
on the..... day of....., 1950; the cause of death being.....  
and a Transit Permit being asked for burial at.....  
in the State of.....  
(Signed by)  
Name of Undertaker or person in charge of the Transit.....  
(Official title)  
(P. O. address.)

This Permit must in all cases accompany the body to its Destination

TRANSIT.

[Stub to be retained by official issuing Permit.]

TRANSIT PERMIT.

1. Issued to .....
2. Name of Deceased, .....  
(If a minor, give parents' names.)
3. Interment at .....
4. Date of Death, ..... Age, .....
5. Place of Death, .....
6. Cause of Death, .....
7. Certified by..... M. D. ....

TRANSIT PERMIT.

Issued at ..... Co., Pa.  
.....  
Issued by.....  
To whom issued.....  
Name of Deceased, .....  
Date of Death,.....  
Name of person or Carrier in charge,.....  
Date of Transit,.....

(BACK OF ABOVE PERMIT.)

Railroad and Steamboat Agents, Ferry-Masters and all Carriers that convey the remains over the limits of the county where the death occurred will retain one of the Coupons hereto attached, and deliver the body only to the persons holding this permit. The name of the deceased must appear on the Coupons, which will be returnable to the city or place through or out of which the body is first conveyed, or to such authority as may be directed by the person who issued the Permit.

The 1st Coupon should be taken by the carrier who transports the body from the county where the death occurred; and the 2d should be taken by Carrier or Agent of Transportation upon the route beyond said county, and it may be so taken at either terminus of the distance over which the second stage of transportation extends, as the local sanitary regulations may require; but whoever detaches and takes said 2d Coupon must write across the back of the Permit, as well as upon the 2d Coupon itself in the space at the left of these directions, as follows:

2d Coupon taken at ..... by .....  
Such an indorsement will answer instead of further coupons wherever the body is conveyed, and the Permit is to be surrendered at the place of burial. It, as well as every Coupon, should be preserved.

2d Coupon taken at.....  
by.....

SECOND } taken at.....  
COUPON. } by.....

FIRST COUPON.

(R. V.)

REGULATION IN REGARD TO THE INTERSTATE NOTIFICATION OF THE  
EXISTENCE OF INFECTIOUS AND CONTAGIOUS DISEASES.

The following are the resolutions adopted by the International Conference of Boards of Health, at Toronto, October 6, 1886, with slight verbal modifications :

WHEREAS, It is necessary for the protection and preservation of the public health that prompt information should be given of the existence of cholera, yellow fever or small-pox ; be it *Resolved*—

1. That it is the sense of the National Conference of State Boards of Health, that it is the duty of each State and provincial board of health within whose jurisdiction any of said diseases may occur to furnish immediate information of the existence of such disease to boards of health of neighboring states and provinces, and to local boards in such states as have no central board, in which the duty of notification shall lie upon the local boards.

2. That upon the prevalence of rumor of the existence of pestilential disease in any state or province, if positive definite information thereon be not obtainable from the proper health authorities, this conference holds that the health officials of another state are justified in entering the before-mentioned state or province for the purpose of investigating and establishing the truth or falsity of such reports.

3. That whenever practicable, the investigations undertaken under the preceding section shall be made with the co-operation of the state or local health authorities.

4. That any case which presents symptoms leading to serious suspicion of the existence of one of the aforementioned diseases shall be treated as suspicious, and reported as provided for in cases in which the diagnosis is certain.

5. That any case respecting which reputable and experienced physicians disagree as to whether the disease is or is not pestilential, shall be reported as suspicious.

6. That any suspected case respecting which efforts are made to conceal its existence, full history and true nature, shall be deemed suspicious and so reported.

7. That in accordance with the provisions of the foregoing resolutions, the boards of health of the United States and Canada represented at this conference, do pledge themselves to an interchange of information as herein provided.

I certify that the foregoing resolutions were endorsed, and adopted as a regulation, by the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, at a regular meeting held November 10, 1886.

BENJAMIN LEE,  
*Secretary.*

Addendum to regulation in regard to the interstate notification of contagious and infectious diseases, adopted by the National Conference of State Boards of Health at Washington, September 8, 1887, and by the State Board of Health of Pennsylvania, November 9, 1887.

1. All communicable diseases, hereinafter mentioned, prevalent in certain areas, or which tend to spread along certain lines of travel, shall be reported to all state and provincial boards of health within said areas or along said lines of communication.

2. In the instance of small-pox, cholera, yellow fever and thypus, reports shall be at once forwarded, either by mail or telegraph, as the urgency of the case may demand.

3. In the instance of diphtheria, scarlet fever, typhoid fever, anthrax or glanders, weekly reports when possible shall be supplied in which shall be indicated as far as known the places implicated and the degree of prevalence.

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(R. VI.)

REGULATION OF THE STATE BOARD OF HEALTH AND VITAL  
STATISTICS OF "THE COMMONWEALTH OF PENNSYLVANIA  
FOR THE BETTER PRESERVATION OF THE PUBLIC HEALTH,  
AND TO LIMIT THE PROGRESS OF EPIDEMIC (CONTAGIOUS  
AND INFECTIOUS) DISEASES.

In virtue of the powers conferred by the act of assembly of June 3, 1885, section five and six, P. L. 56 of the Laws of the Commonwealth of Pennsylvania, be it ordered by the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, and it is hereby ordered by the authority of the same:

SECTION 1. That whatever is dangerous to human life or health, whatever renders the air or food or water or other drink unwholesome, and whatever building, erection or part or cellar thereof, is overcrowded, or not provided with adequate means of ingress and egress, or is not sufficiently supported, ventilated, sewered, drained, cleaned or lighted, are declared to be nuisances, and to be illegal; and every person having aided in creating or contributing to the same, or who may support, continue or retain any of them, shall be deemed guilty of a violation of this regulation, and also be liable for the expense of the abatement and remedy therefor.

Nuisances defined.

SECTION 2. No house-refuse, offal, garbage, dead animals, decaying vegetable matter, or organic waste substance of any kind, shall be thrown on any street, road,

House refuse, garbage, etc., not to be exposed.



ditch, gutter or public place, and no putrid or decaying animal or vegetable matter shall be kept in any house, cellar or adjoining out-building or grounds for more than twenty-four hours.

Pig pens to be properly constructed and kept clean.

SECTION 3. No pig pen shall be built or maintained within one hundred feet of any well or spring of water used for drinking purposes, or within thirty feet of any street or of any inhabited house, or unless constructed in the following manner, viz., so that the floor or floors of the same shall be not less than two feet from the ground, in order that the filth accumulating under the same may be easily removed.

Privies not to remain near wells of drinking water.

SECTION 4. No privy-vault, cesspool or reservoir into which a privy, water-closet, cesspool, stable or sink is drained, unless it is water-tight, shall be constructed, dug or permitted to remain within one hundred and fifty feet of any well, spring or other source of water used for drinking or culinary purposes; unless the surface of such vault, cesspool or reservoir is at a lower level than the bottom of such well. Earth privies and earth closets, with no vault, pit or depression below the surface of the ground, shall be excepted from this regulation, but sufficient dry earth or coal ashes must be used daily to absorb all the fluid part of the deposit.

SECTION 5. All sewer-drains shall be water-tight.

Sewer-drains not to contaminate water supply.

SECTION 6. No sewer-drain shall empty into any lake, pond, dam, reservoir, or other collection of water used for drinking purposes, or into any standing water.

SECTION 7. All pipes connecting a water-closet with a soil-pipe shall be trapped, each separately. All waste pipe shall be trapped, each separately, and close to the connections with each bath, sink, bowl or other fixture, unless adequate provision is made for downward ventilation through said waste-pipes, in which case one trap may serve for several fixtures.

SECTION 8. All soil-pipes shall be carried at their full size through the roof and left open. A provision shall also be made for admitting air to the house-drain side of the main trap, if such trap exists.

SECTION 9. The joints in vitrified pipe shall be carefully cemented under and around the pipe, and the joints in cast iron pipe shall be run and calked with lead.

SECTION 10. All changes in direction shall be made with curved pipes. All joints and pipes shall be made air tight.

SECTION 11. The following named diseases are declared to be communicable and dangerous to the public health, viz: Small-pox (variola, varioloid), cholera (Asiatic or epidemic), scarlet fever (scarlatina, scarlet rash), measles, diphtheria (diphtheritic croup, diphtheritic sore throat), typhoid fever, typhus fever, yellow fever, spotted fever (cerebro-spinal meningitis), relapsing fever, epidemic dysentery, hydrophobia (rabies), glanders (farcy), and leprosy, and shall be understood to be included in the following regulations, unless certain of them only are specified.

Diseases dangerous to public health enumerated

SECTION 12. Whenever any householder knows that any person within his family or household has a communicable disease, dangerous to the public health, he shall immediately report the same to the school board (or borough council), giving the street and number, or location of the house.

Householders required to report.

SECTION 13. Whenever any physician finds that any person whom he is called upon to visit has a communicable disease, dangerous to the public health, he or she shall immediately report the same to the school board (or borough council), giving the street and number or location of the house, on the receipt of which report the said board shall immediately notify the teacher or principal of every school in the district, instructing said teachers or principals to dispense with the attendance of all pupils residing in the family in which such disease exists. No physician who may, in good faith, in obedience to this ordinance, report a case as one of communicable disease which subsequently proves not to be such, shall be liable to a suit for damages for such error in reporting. It shall be the duty of such physician and of all other attendants upon persons affected with such diseases to avoid exposure to the public of any garments or clothing about their own persons that may have been subjected to the risk of infection.

Physicians required to report.

School teachers to be notified.

Physicians not to be sued for mistakes in obeying this regulation.

SECTION 14. No persons shall, unless by permit of a board of health (or borough council), carry or remove from one building to another any patient affected with any communicable disease, dangerous to the public health. Nor shall any person, by any exposure of any individual so affected, or of the body of such individual, or of any article capable of conveying contagion or infection, or by any negligent act connected with the care or custody thereof, or by a needless exposure of himself or herself,

Exposure of infected persons or things forbidden

cause or contribute to the spread of disease from any such individual or dead body.

Funerals after infectious diseases forbidden.

SECTION 15. There shall not be a public or church funeral of any person who has died of Asiatic cholera, small-pox, typhus fever, diphtheria, yellow fever, scarlet fever or measles, and the family of the deceased shall in all such cases limit the attendance to as few as possible, and take all precautions possible to prevent the exposure of other persons to contagion or infection; and the person authorizing the public notice of death of such person, shall have the name of the disease which caused the death appear in such public notice.

Public notice of cause of death required.

Public conveyances not to be infected.

SECTION 16. No person suffering from, or having very recently recovered from, small-pox, scarlet fever, diphtheria, yellow fever, or measles, shall expose himself, nor shall any one under his charge in a similar condition, in any public conveyance, without having previously notified the owner or person in charge of such conveyance of the fact of such condition as above stated. And the owner or person in charge of such conveyance must not, after the entry of any person so infected into his conveyance, allow any other person to enter it without having sufficiently disinfected it.

Infected conveyances not to be used until disinfected.

Infected houses or rooms not to be let.

SECTION 17. No person shall let or hire any house or room in a house, in which a communicable disease, dangerous to the public health, has recently existed, until the room or house and premises therewith connected have been disinfected and for the purposes of this section, the keeper of a hotel, inn or other house for the reception of lodgers, shall be deemed to let or hire part of a house to any person admitted as a guest into such hotel, inn or house.

Isolation of families required.

SECTION 18. Members of any household in which small-pox, diphtheria, scarlet fever or measles exists, shall abstain from attending places of public amusement, worship or education, and, as far as possible, from visiting other private houses.

Disinfection required.

SECTION 19. The clothing, bed clothing and bedding of persons who have been sick with any communicable disease, dangerous to the public health, and the rooms which they have occupied during such sickness, together with their furniture, shall be disinfected as directed in the circulars of this board.

Infected animals to be excluded.

SECTION 20. No animal affected with a communicable disease dangerous to the public health, shall be brought

within the limits of this commonwealth, and the bodies of such animals dead of such disease or killed on account thereof shall be buried with quicklime under four feet of earth or burned, but shall not be buried within five hundred feet of any residence, or of any source of water supply.

SECTION 21. No milk which has been watered, adulterated, reduced or changed in any respect from its natural condition by the addition of any foreign substance, shall be held, kept or offered for sale.

Milk not to be adulterated.

SECTION 22. No meat, fish, birds, fowls, fruit, vegetables, milk, and nothing for human food, not being then healthy, fresh, sound, wholesome, fit and safe for such use, nor any animal or fish that died by disease, and no carcass of any calf, pig or lamb, which at the time of its death was less than three weeks old, and no meat therefrom shall be brought within the limits of this commonwealth or offered or held for sale as food.

No unwholesome food to be sold.

SECTION 23. It shall be the duty of the occupant of every house in the month of May, in each and every year, to cleanse the cellars thereof of all dirt, vegetable and other impure matter calculated to engender disease, and to cause them to be thoroughly whitewashed with fresh lime.

Cellars to be cleansed.

SECTION 24. No pupil shall be allowed to attend the public schools in this commonwealth who has not been vaccinated successfully within seven years.

Vaccination of school children required.

SECTION 25. No parents, guardian or master, in whose house or family there shall have been a communicable disease, dangerous to the public health, shall permit any child residing in said house or family to attend any public, private or Sunday school, after the cessation of said disease, within a period of ten days after the house shall have been thoroughly disinfected and cleansed. And it shall be the duty of school boards to have this section printed on cards, mentioning the names of diseases declared communicable and dangerous to the public health in section thirty-one of this regulation, and posted in every school room, and it shall be the duty of each teacher to read the section to the school at least once a month and whenever any epidemic shall appear.

Period of isolation established for school children.

Children to be instructed in regard to danger of infection.

SECTION 26. Every person who acts as a sexton or undertaker, or cemetery keeper, or has the charge of any tomb, vault, burying grounds or other place for the reception of the dead, or where the bodies of any human

Sextons, cemetery keepers, etc.



beings are deposited, shall so conduct his business and so care for any such place above named, as to avoid detriment or danger to public health; and every person undertaking preparations for the burial of a body dead from communicable diseases as hereinbefore enumerated, shall adopt the precautions prescribed in Regulation IV of this board. No dead body shall be exhumed and removed between the months of May and October inclusive, and no body dead from any contagious or infectious disease shall be exhumed and removed unless by special authority and upon such conditions as the State Board of Health may impose.

Penalties to be inflicted.

SECTION 27. Every person violating any section is liable for every such offense, upon conviction before any court, to a fine of not more than one hundred dollars, at the discretion of the court.

COMPENDIUM

OF THE

Laws Relating to Public Health and Safety

OF THE

STATE OF PENNSYLVANIA

TOGETHER WITH

The Decisions of the Supreme Court and County  
Courts Relating Thereto.



IN THE HOUSE OF REPRESENTATIVES,

*February 18, 1887.*

*Resolved* (if the Senate concur), That five thousand copies of the Compendium of the Sanitary Laws of the Commonwealth, prepared by the State Board of Health, in obedience to the requirements of section fifth of the act establishing said board, be printed in pamphlet form, paper covers, seventeen hundred and fifty thereof for the use of the House of Representatives, one thousand thereof for the use of the Senate, seventy-five thereof for distribution by the Governor, seventy-five for the use of the State Librarian, for distribution and exchange with states and territories, and the remainder for the use of the State Board of Health.

Extract from the Journal of the House of Representatives.

SAMUEL A. LOSCH,

*Chief Clerk of the House of Representatives.*

The foregoing resolution concurred in by the Senate.

THOMAS B. COCHRAN,

*Clerk Chief of the Senate.*

APPROVED—The 13th day of May, A. D. 1887.

JAMES A. BEAVER.





## INTRODUCTORY NOTE.

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Sanitary legislation is no new thing in Pennsylvania. An act to prevent the introduction of infectious diseases into the province was passed January 22, 1774 (MS. Laws, chap. 289). Twenty years later this was revised and amended, and the comprehensive act of April 22, 1794, to establish a health office in Philadelphia, was adopted, with the following preamble :

WHEREAS, The laws for preventing pestilential and infectious diseases being brought into this commonwealth have proved defective, and the increasing intercourse between the United States and foreign countries renders it necessary to provide, as well for the establishment of an efficient health office as for otherwise more effectually securing the port of Philadelphia from the introduction of pestilential and contagious diseases, and regulating the importation of German and other passengers :

SECTION 1. *Be it enacted, etc.,* That the messuage, tenements and lot of ground, situated and being in the river Delaware, commonly called State Island, which have heretofore been reserved, occupied and employed for the purpose of a public hospital or pest-house, shall be and the same are hereby erected and established into an health office for the city of Philadelphia.

The board of health of Philadelphia was originally created and incorporated by that name 11 April, 1799 (4 Dallas' Laws' 489), but received more permanent form in the act of 17 March, 1806 (4 Sm. 303, amended 31 March, 1812, 5 Sm. 373), which repealed all previous health laws.

A concise sketch of the Philadelphia board and summary of the legislation relating thereto will be found in Allinson and Penrose's valuable History of the Municipal Development of Philadelphia, pp. 112, 215, 274. From time to time as new centers of population have developed and new industries have arisen, additional enactments have constantly been found necessary, until their number is now very considerable.

One of the duties assigned, by the act creating it, to the State Board of Health, is the codification of, and suggestion of amendments to, the sanitary laws of the commonwealth. The committee on sanitary legislation, to which this duty was assigned, after a careful survey of the field, were convinced that while there were was much valuable legisla-

tion on health subjects scattered through the statute books, it was yet in too crude and disjointed a condition to be susceptible of codification. The entire absence of any attempt to establish sanitary organization outside of incorporated municipalities, alone made it unadvisable to undertake the work until that manifest deficiency had been supplied. It was thought wiser, therefore, simply to arrange a classified compendium of the laws relating to the protection of public health, and of life so far as within the province of boards of health, and to the registration of vital statistics, and to defer the completion of this important work until legislation shall have taken such definite shape as will form the basis for a harmonious sanitary code.

In the meantime it is hoped that this volume will prove of use to boards of health, health officers, sanitary committees, municipal authorities, inspectors of mines, sanitary inspectors, and all others to whom is assigned the duty of the enforcement of the health laws of the commonwealth.

## ABBREVIATIONS

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|                      |                                                                                                                     |
|----------------------|---------------------------------------------------------------------------------------------------------------------|
| Bro., . . . . .      | Browne's Reports.                                                                                                   |
| Chester Co., . . .   | Chester County Reports.                                                                                             |
| Clark, . . . . .     | Clark's Reports.                                                                                                    |
| Del. Co., . . . . .  | Delaware County Reports.                                                                                            |
| Grant, . . . . .     | Grant's Cases.                                                                                                      |
| Haz. Pa. Reg., . .   | Hazard's Penna. Register.                                                                                           |
| Leg. Int., . . . .   | Legal Intelligencer.                                                                                                |
| Leg. Gaz., . . . .   | Legal Gazette.                                                                                                      |
| Luz. Leg. Reg., . .  | Luzerne Legal Register.                                                                                             |
| Luz. Leg. Obs., . .  | Luzerne Legal Observer.                                                                                             |
| Parsons, . . . . .   | Parsons' Select Equity Cases.                                                                                       |
| Penn. St., . . . . . | Penna. State Reports.                                                                                               |
| Phila., . . . . .    | Philadelphia Reports.                                                                                               |
| Pittsburg, . . . . . | Pittsburg Reports.                                                                                                  |
| Pitts. Leg. Jour., . | Pittsburg Legal Journal.                                                                                            |
| S. & R., . . . . .   | Sergeant and Rawles' Reports.                                                                                       |
| Susq. Leg. Chron.,   | Susquehanna Legal Chronicle.                                                                                        |
| Sm., . . . . .       | P. F. Smith's Reports, or, when referring to statutes,<br>as it always does in the marginal notes, Smith's<br>Laws, |
| W. N. C., . . . . .  | Weekly Notes of Cases.                                                                                              |
| P. L., . . . . .     | Pamphlet Laws.                                                                                                      |
| P. D., . . . . .     | Purdon's Digest of Penna. Laws. Edition of 1885.                                                                    |
| B. P. D., . . . . .  | Brightly's Digest of Philadelphia.                                                                                  |
| W. D., . . . . .     | West's Digest of Philadelphia.                                                                                      |
| Cwlth., . . . . .    | Commonwealth.                                                                                                       |

Unless otherwise indicated, acts are given in full, as found in the Digests. Omissions are marked thus \* \* \* \* \*

Portions in the language of the compiler are put between brackets.



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# COMPENDIUM OF SANITARY LAWS.

## I. STATE BOARD OF HEALTH.

To establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth.

1. The Governor, by and with the advice and consent of the senate, shall appoint six persons, a majority of whom shall be physicians of good standing, graduates of regularly chartered and legally constituted medical colleges, and of not less than ten years' experience in the practice of their profession, and one of whom shall be a civil engineer, who, together with the secretary, the mode of whose appointment is hereinafter provided for, shall constitute and be designated as the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania. Of the six persons first appointed, two shall serve for two years, two for four years, and two for six years from the first day of July next following their confirmation; and the Governor shall thereafter biennially appoint, by and with the advice and consent of Senate, two persons of the same professions as those whose terms of office have just expired, to be members of said board, to hold their offices for six years from the first day of July next following their confirmation, and until their successors are appointed, excepting the secretary who shall continue in office as hereinafter provided, but any member may be reappointed. Any vacancy occurring in said board during a recess of the legislature shall be filled by the Governor until the next regular session of the same.

2. As soon as possible after the appointment of the first six persons, as aforesaid, they shall meet in the office of the Secretary of the Commonwealth, and shall proceed, under the direction of the latter officer, to determine by lot which of them shall serve for the respective terms of two, four and six years. Before entering upon the duties of the office, they shall take the oath prescribed for state officers by the constitution of the state, and shall file the same in the office of the Secretary of the Commonwealth, who, upon receiving the said oath of office, shall issue to

3 June, 1885, § 1.  
P. L. 56.  
P. D. 2215.

Governor to appoint and Senate to confirm State Board of Health. Qualifications of members.

Terms of the members fixed.

Governor to appoint members biennially.

Fixed term.

Vacancies during recess to be filled by the Governor.

Ibid, § 2.

Manner of organization.

3 June, 1885.

Appointment of  
secretary.

Actual expenses of  
members to be  
paid.

Ibid, § 3.

Duties of secre-  
tary.

Salary of secretary.

Ibid, § 4.

Time and place of  
meeting.

each a certificate of appointment for his respective term of office determined as aforesaid; upon receiving which they shall possess and exercise the powers, and perform the duties, of said board as defined in this act. Immediately after having taken the oath of office, they shall organize by electing one of their number to be president, and by appointing a proper person, who shall be a physician of good standing, of not less than ten years' professional experience, and a graduate of a legally constituted medical college, to be secretary of said board, who shall hold his appointment until removed by the appointment of his successor or otherwise. The board may elect one of its own members secretary, in which case the vacancy thus created shall be filled by the Governor in the same manner as a vacancy caused in any other way. The president shall be elected annually. No member of the board, except the secretary, shall, as such, receive any salary; but the actual traveling and other expenses of any member, while engaged on the actual duties of the board, shall be allowed and paid on presentation to, and approval by, the Auditor General of an itemized account with vouchers annexed.

3. The secretary shall be the executive officer of the board, and shall have all the powers and privileges of a member of said board, except in regard to voting upon matters relating to his own office and duties as secretary. He shall receive an annual salary of two thousand dollars, which shall be paid him in the same manner that salaries of other state officers are paid; and such necessary expenses as the Auditor General shall audit, on presentation of an itemized account with vouchers annexed and the certificate of the board, shall be allowed him.

4. The said board shall meet at least once every six months, and may also hold special meetings as frequently as the proper and efficient discharge of its duties shall require, in the capitol building at Harrisburg (unless otherwise ordered), and the rules and by-laws of the board shall provide for the giving of proper and timely notice of all such meetings to every member of the board. The Secretary of Internal Affairs shall provide and furnish such apartments and stationery as said board may require in the discharge of its duties. A majority of the members of the board shall, at any regular, called, or adjourned meeting, organize and constitute a quorum for the transaction of business.

5. The State Board of Health and Vital Statistics shall have the general supervision of the interests of the health and lives of the citizens of the commonwealth, and shall especially study its vital statistics. It shall make sanitary investigations and inquiries respecting the causes of disease and especially of epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employments, conditions, habits, food, beverages and medicine, on the health of the people. It shall also disseminate information upon these and similar subjects among the people. It shall, when required by the Governor or the legislature, and at such other times as it deems it important, institute sanitary inspections of public institutions or places throughout the state. It shall codify and suggest amendments to the sanitary laws of the commonwealth, and shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases.

3 June, 1885 § 5.

Duties and functions of board defined

6. In cities, boroughs, districts and places having no local board of health, or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative, the State Board of Health shall have power and authority to order nuisances, or the cause of any special disease or mortality, to be abated and removed, and to enforce quarantine regulations, as said board shall direct.

Ibid. § 6

Powers of board in absence of local boards.

Any person who shall fail to obey, or shall violate, such order shall, on conviction, be sentenced to pay a fine of not more than one hundred dollars at the discretion of the court

Penalty for violation or neglect.

7. It shall be the duty of the State Board of Health and Vital Statistics to have general supervision of the statesystem of registration of births, marriages and deaths, of prevalent diseases, and of practitioners of medicine and surgery. to prepare the necessary methods, forms and blanks for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties and in the central bureau of vital statistics at the capital of the state. The said board shall recommend such forms and amendments of laws as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the state. The Secretary of the State Board of Health and Vital Statistics shall be the superintendent of registration of vital statistics; as supervised by said board,

Ibid. § 7

Function of board in registration.



3 June, 1885.

Secretary of Internal Affairs to provide clerical assistance, stationery and apartments.

*Ibid.*, § 8.

Local boards of health and institutions to report to board

*Ibid.*, § 9.

Scientific investigations.

*Ibid.*, § 10.

Annual report.

the clerical duties and safe-keeping of the bureau of vital statistics thus created shall be provided for by the Secretary of Internal Affairs, who shall also provide and furnish such apartments and stationery as said board shall require in the discharge of such duties.

8. It shall be the duty of all health officers and boards of health in the state to communicate to said State Board of Health copies of all their reports and publications, and also such sanitary information as may be requested by said board. And said board is authorized to require reports and information (at such times, and of such facts, and, generally, of such nature and extent as its by-laws or rules may provide) from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals and officers thereof, and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees and occupants of all places of public resort in the state; but such reports shall only be required concerning matters or particulars in respect of which it may, in its opinion, need information for the proper discharge of its duties.

9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relative thereto. But no more than two thousand dollars shall be expended in any one year for such special sanitary service.

10. It shall be the duty of said board, on or before the first Monday of December in each year, to make a report in writing to the Governor of this state upon the sanitary condition and prospects of the state; and such report shall set forth the action of the said board and its officers and agents, and the names thereof, for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health; and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board, and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of five thousand dollars in any one year.

11. The sum of ten thousand dollars (\$10,000) is hereby appropriated from the treasury for the purposes of this act and the expenditures properly incurred by the authority of said board and verified by affidavit, subject, however, to the limitations hereinbefore imposed, and shall be paid by the treasurer upon the warrant of the Auditor General.

2 June, 1887. § 11  
Appropriation.

12. This act shall take effect immediately, and all acts or parts of acts inconsistent herewith shall be, and are hereby repealed.

Ibid, § 12

13. Five thousand copies of the Annual Report of the State Board of Health and Vital Statistics shall be printed annually, four thousand to be bound in muslin, and one thousand in paper; seventeen hundred and fifty thereof for the use of the House of Representatives, one thousand thereof for the use of the Senate, seventy-five thereof for the use of the Governor, seventy-five thereof for the State Librarian for distribution and exchange with the states and territories, five hundred thereof for reserve work, and the remainder thereof for exchange and distribution by the State Board of Health.

16 April, 1887. § 1.  
P. L. 57.

Annual report of  
State Board.

14. The following sums be and are hereby specifically appropriated to defray the expenses of the State Board of Health and Vital Statistics for two years, namely: For the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-seven, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-eight: For the salary of the secretary and executive officer, for two years, four thousand dollars. For employment of necessary clerical aid in the office of the board, for two years, fifteen hundred dollars, or so much thereof as may be necessary. For postage, telegrams, express charges and incidental expenses, for two years, one thousand dollars, or so much thereof as may be necessary. For traveling and other necessary expenses of the members and secretary of the board, while engaged on the actual duties of the board, for two years, one thousand dollars, or so much thereof as may be necessary. For sanitary inspections and sanitary investigations respecting the cause of disease and control of epidemics, for two years, twenty-five hundred dollars, or so much thereof as may be necessary: *Provided*, That the secretary of said board shall make return to the Auditor General of the Commonwealth of Pennsylvania, at the end of the fiscal year, an itemized

2 June, 1887. § 1.  
P. L. 296.

Expenses of State  
Board of Health.

Secretary and executive officer.

Clerical assistance.

Postage, etc

Traveling and other necessary expenses.

Sanitary inspections.

Secretary to make an itemized account of expenditures.

2 June, 1887.

Penalty for failure  
to make such re-  
turn.

account, under oath, of the moneys appropriated under this act, or so much thereof as may be drawn from the treasury and disbursed by the said board, with the amounts paid each of the officers and employes for each year; and unless such account is rendered, as aforesaid, no further appropriation, or other money here appropriated by this act for the year eighteen hundred and eighty-seven, shall be paid by the State Treasurer to this board until this provision is complied with.

## II. BOARDS OF HEALTH FOR CITIES OF THE FIRST CLASS.\*

### Philadelphia.

7 April, 1859, § 5.  
P. L. 402.  
W. D. 10.

To consist of nine  
members.

To be appointed by  
the courts and  
elected by councils.

15. The board of health shall consist of nine† respectable citizens and electors of said city of Philadelphia, who shall be selected in the following manner, to-wit: On the first Monday in June, A. D. 1859, the judges of the district court for the city and county of Philadelphia, shall appoint three reputable citizens and electors of said city of Philadelphia, to be members of the board of health, as constituted under the provisions of this act, one to serve one year, one to serve two years, and one to serve three years; and annually thereafter, the said court shall appoint one person to be a member of said board; the court of common pleas shall, in like manner, and at the same time, appoint the same number of members of said board; and annually thereafter, the said court shall appoint one person to be a member of said board; the judges of the supreme court of this state shall, in like manner, and at the same time, appoint the same number of members of said board; and annually thereafter the said court shall appoint one person to be a member of said board; the select and common councils of the city of Philadelphia, in joint convention, at any stated meeting in June next, shall elect the same number of members of said board, one to serve one year, one to serve two years and one to serve three years; and annually thereafter, at any meeting in June, said councils, in joint convention, shall elect one member of said board to serve three years.

\* For classification of cities, see IV, Cities of the Thrd, Fourth and Fifth Classes.

† Now five, by act of 1 June, 1885, P. L., 42, B. P. D., 99.

16. In case a vacancy occur in the said \* \* \* board of health, from death, resignation or otherwise, it shall be supplied and filled, for the unexpired term of such member, by the court which appointed, or the councils which elected the member thus dying, resigning or otherwise vacating his seat in the board of which he was a member.

7 April, 1859, § 7.  
Vacancies, how filled.

17. They shall each take the usual oath of office, and enter upon the duties thereof on the first Monday in July next succeeding their election.

2 February, 1854, § 16.  
P. L. 32  
B. P. D. 99.

The members of the board of health shall meet on the morning of the first Monday in July of the same year, at ten o'clock, and on the first Monday of July in each year at the same hour, and organize into a board, and shall elect a president and such other officers as may be necessary for the proper transaction of the business of the said board; and upon such organization, shall thereby supersede the present members and officers of the board of health, and thereupon all the estate whatsoever, real, personal and mixed, that shall then be by law or otherwise vested in or in possession of the board of health, shall be forthwith vested in the city of Philadelphia, subject to all the trusts, conditions and liabilities now legally applicable thereto; and all laws of this commonwealth creating, governing and regulating the board of health, not inconsistent herewith, shall continue in force and operation, and shall govern and regulate the board of health of the city of Philadelphia, except as to farmers manuring land and keeping stock in the strictly agricultural districts, except as the same may hereafter be altered by law or ordinance; and all sums of money due, payable to, or received by the board of health, shall be paid into the city treasury; and all sums expended by or for the purposes of the board of health, shall be paid by the city treasurer upon orders drawn upon appropriations regularly made by councils. The said board shall sit upon their own adjournment as they shall find necessary, but shall meet at least once in every day, between the first day of June and the first day of October in every year; and also when the board shall be specially convened by order of the president or any two of the members.

Time of meeting.

Supersede present members,

All property belonging to the old board to vest in the city.

Money paid into city treasury and paid out upon appropriations by councils.

29 January, 1818, § 1.  
P. L. 38.  
W. D. 11.

Daily meetings between June 1 and October 1.

18. The jurisdiction, powers, duties and authority of the board of health shall extend to and over the city of Philadelphia, the incorporated districts of the Northern Liberties, Kensington, Richmond, Spring Garden, Penn,

3 February, 1848, § 1.  
P. L. 18.  
W. D. 15.

Jurisdiction of board



3 February, 1848.

and Southwark, and the township of Moyamensing ; \* and all violations of health laws now punished, or hereafter to be punished, by fine, forfeiture, imprisonment, or otherwise, shall be prosecuted and sued for, if committed within the jurisdiction of the board, in like manner, and as fully, and to all intents and purposes, as if any of the said places had been especially named.

12 April, 1886, §1.  
P. L. 854.  
W. D. 15.

Power to administer oaths given certain officers.

19. The president, the secretary and the chief clerk of the board of health, and the health officer of the city and port of Philadelphia, shall have power to administer oaths and affirmations in conducting the business of their respective offices, in connection with said board ; and if any person or persons shall wilfully and absolutely swear or affirm falsely in taking any oath or affirmation required by such officers aforesaid, in the proper performance of their respective duties, such person or persons so offending shall, upon due conviction thereof, be subject to the pains and penalties which are by law prescribed for the punishment of wilful and corrupt perjury.

April, 1859, § 8.  
P. L. 408.  
W. D. 11.

Penalty for any corrupt official act.

20. Upon conviction in any court of criminal jurisdiction of any member or members of said \* \* \* board of health of any wilful misapplication of the funds or property of the said board, or funds or property of the said city of Philadelphia, or of any fraudulent and corrupt official act, he or they so offending and convicted shall be sentenced to pay a fine of not less than one hundred nor more than one thousand dollars, and undergo an imprisonment in the county prison for a term not exceeding one year, at the discretion of the court.

29 January, 1818, § 28  
P. L. 52.  
P. D. 1558.  
W. D. 13.

Penalty for obstructing board of health.

21. If any person shall wilfully and knowingly obstruct or resist the board of health, or any of the members thereof, or any person by them appointed, in the execution of the powers to them given, or in performance of duties enjoined on them by this act, and the rules and regulations of the said board, such person shall, on being thereof legally convicted, forfeit and pay a sum not exceeding five hundred dollars, to be recovered and appropriated as is hereinafter directed. And if, after the expiration of the quarantine, any mariner or other person, who shall have complied with the regulations hereby established, shall commit any violence on the person of a member of the board of health, or any of the officers at-

\* By the consolidation act of 2d February, 1854, P. L., 21, all these districts were merged in the city of Philadelphia.

tached to the same, for anything done in the execution of his duty, such person shall be subject, on conviction thereof, to a fine of two hundred dollars, and shall also be sentenced to imprisonment at hard labor for any term not exceeding three years.

**22.** For payment and satisfaction of all forfeitures and penalties which are imposed by this act, and all sums of money directed by this act to be paid, it shall be the duty of the health officer to sue and prosecute, and the same to collect, recover and receive, and the same shall be recoverable before any alderman, justice of the peace or court of justice having lawful jurisdiction, to the amount of such forfeitures, penalties, and sums of money respectively, or in the case, or upon the offense upon which the proceeding shall be had, and the same when recovered and received, shall be appropriated, and shall inure to the use of the institution under the management and direction of the board of health. And no citizen or inhabitant of the city of Philadelphia, the district of Southwark or the townships of the Northern Liberties, Moyamensing or Penn, shall be disqualified from sitting as judges or jurors, or from giving testimony respecting any of the offenses mentioned in this act, by reason of his, her, or their common interest in the appropriation of the sum or penalties imposed for such offense, nor shall any member of the board of health, or any officer intrusted with the execution of this act, or any part thereof, be disqualified from giving testimony respecting any of the said offenses. And the said members of the board of health shall, during their continuance in office, be exempted from the duties of jurors, and from militia duty.

**23.** All actions or prosecutions to be commenced against any master, captain, owner or consignee of any ship or vessel, or other person, by virtue of this act, shall be brought within twelve months next after the commission of the offense wherewith he is charged, and if any action or suit shall be commenced against any person or persons, for any matter or thing committed in violation of this act, the defendant or defendants may plead the general issue, and give this act and special matter in evidence, at any trial to be had thereupon. And for the payment and satisfaction of all forfeitures and penalties which are imposed, and all sums of money directed by this act to be paid by the masters, captains, owners or consignees, as well the ships or vessels respectively, as

29 January, 1818.

Ibid. § 29.  
P. D. 1558.  
W. D. 13.  
How penalties recoverable.

No citizen disqualified as witness.

Members exempted from military and jury duty.

Ibid. § 31.  
P. D. 1558.  
W. D. 13.

Limitation of actions.

Who liable for penalties.

29 January, 1818

16 March, 1855, § 9.  
P. L. 91.  
W. D. 15.

Contracts, suits,  
etc., to be in name  
of the city of Phila-  
delphia.

12 April, 1858, § 3.  
P. L. 386.  
W. D. 15.

No contract binding  
without warrant  
duly issued.

16 April, 1866, § 1.  
P. L. 946.  
W. D. 16.

Powers for the col-  
lection of debts.

16 April, 1845, § 2.  
P. L. 488  
P. D. 1206.

the captains, masters, owners or consignees thereof, shall be and are hereby declared liable.

24. All contracts made by or with the board of health, and all recoveries of penalties and suits for other causes of action, under this and other acts to which this is a supplement, shall be in the name of the city of Philadelphia, for the use of the board of health, and nothing herein contained shall in any wise impair the authority of the city corporation over said board of health as one of the departments of said city.

25. The provisions of the twentieth and twenty-first sections of the act of April 21st, 1855, entitled "A supplement to the act consolidating the city of Philadelphia," are hereby extended to the board of health and board of guardians of the poor. No contract made by either of the said boards shall be binding upon the city unless a warrant therefor shall be issued and countersigned in such manner, and by such officers as councils may, by ordinance, prescribe, and such officer shall give bond to the city of Philadelphia in such amount, and with surety as shall be approved by councils, conditioned for the faithful performance of the duties imposed upon said officer, by law or ordinance, and that he will not countersign any warrant upon the city treasurer, except such as may be authorized by law or ordinance, and within the appropriations made by councils.\*

26. The board of health of the city of Philadelphia, shall have, for the collection of all debts due the department of health of the city of Philadelphia, all the powers now conferred upon the receiver of taxes of the city of Philadelphia for the collection of delinquent taxes, by the act entitled "An act to incorporate the city of Philadelphia," approved the second day of February, A. D. 1854, and all the supplements thereto: *Provided*, That nothing herein contained shall be so construed as to authorize any collector or collectors to collect any commission, fee or charge, for the board of health of the city of Philadelphia.

27. No debt, charge or assessment for work hereafter done or materials furnished by or under the authority of

\*Under the act 18 March, 1869, P. L., 397, the finance committee of councils had power to supervise the awarding of contracts by the board of health; the powers conferred by act 23 May, 1874, P. L. 233, not having yet been exercised. *McCafferty v. Steel*, 12 Philadelphia, 236. The power of opening proposals and awarding contracts is now exercised by the board of health, independent of the committee of councils. See B. P. D. 108, n.

the board of health, or any municipal corporation, shall be a lien on real estate for more than six months from the time of doing such work, unless a claim for the same shall be filed in the office of the prothonotary of the proper county within that time, nor shall the same continue a lien longer than five years from the time of filing the claim, unless revised by *scire facias*, in the manner provided by law in the case of mechanics' claims.\*

28. Whenever any penalty given by law to the board of health is not fixed and definite in amount, but varies at the discretion of the court, the same shall in such cases be collected and recovered only by indictment.

29. Whenever, in the judgment of the board of health, any person afflicted with any contagious or infectious disease, and received for treatment in their hospital, shall be unable to pay the expenses of his attendance and treatment there, it shall be the duty of the guardians for the relief and employment of the poor of the city of Philadelphia \* \* \* to repay to the board of health all the expenses incurred in and about the attendance and treatment of such person, according to the rates to be fixed by the said board of health, and in case of his or her death, to repay also the cost of interment: *Provided*, That the charge for board and attendance shall not in any case exceed the rate of three dollars per week.

30. Every person practicing physic in the city, districts and townships aforesaid, who shall have a patient laboring under a pestilential or contagious disease (measles excepted), shall forthwith make a report in writing to the health officer, and for neglecting so to do, he shall be considered guilty of a misdemeanor, and subject to a fine not exceeding fifty dollars.

31. No practicing physician, or other person or persons, shall be allowed to communicate the infection of small-pox by inoculation or otherwise, within the jurisdiction of the board of health, unless by special permission of said board, and any practicing physician, or other person or persons

16 April, 1845

3 February, 1848, § 2.  
P. L. 18.  
P. D. 1559.

Where penalty indefinite in amount recoverable only by indictment.

20 March, 1852, § 5.  
P. L. 172.  
W. D., 15.

Guardians of the poor to repay to board of health expenses of pauper inmates of hospital.

January 29, 1818, § 25.  
P. L. 52.

Physicians in Philadelphia to report all contagious cases to health officer.

29 March, 1824, § 2.  
P. L. 125.  
W. D. 14.

Inoculation of small-pox not permitted without special permission of board of health.

\*The lien of a municipal claim expires at the end of five years, unless a *scire facias* thereon be prosecuted to judgment within that period. *Phila. v. Scott*, 93 Penn. St. 25, and can only be preserved by a revival within each recurring period of five years. *Church v. Sunderland*, 16 W. N. C. 392; *Church v. Phila.*, 108 Penn. St. 466. See B. P. D. 788, n.

Unless filed within six months from the completion of the work, no lien is created. *Pittsburg v. Knowlson*, 92 Penn. St. 116; *Kaiser v. Weisse*, 85 Penn. St. 366; *Sofink v. Allegheny*, 5 W. N. C. 46; P. D. 1206, n.



29 March, 1824.

Penalty.

so transgressing, shall be liable to a penalty not exceeding one hundred dollars, nor less than seventy, for each person so inoculated or infected as aforesaid, to be recovered and appropriated as directed by the act to which this is a supplement.

32. The board of health shall be invested with the same authority to make such general rules, orders or regulations for the preservation of the district from the contagion of small-pox as they already possess in relation to other contagious diseases dangerous to the health of the community.

1 June, 1885, Art. 1.  
§ 1.

P. L. 37.  
P. D. 2281.

"Bullitt" bill.

33. [This act, known as the "Bullitt" bill, for the government of cities of first class, applying at present only to Philadelphia, went into effect the first Monday of April, A. D. 1887, and provides (Sec. I, Cl. V), that the mayor shall be *ex-officio* a member of all boards, except that of "building inspectors." The board of health is incorporated into the department of public safety, as follows:] The department of public safety shall be under the charge of one director who shall be the head thereof.

Art. III, § 1.

Police affairs and  
public health.

34. The care, management, administration and supervision of the police affairs and all matters relating to the public health, to the fire and police force, fire alarm telegraph, erection of fire escapes and the inspection of buildings and boilers, markets and food sold therein, shall be in charge of this department.

Board of health to  
consist of five mem-  
bers nominated by  
the mayor.

35. In cities of the first class, the board of health shall continue with the powers and duties now vested in it by law, but the members thereof shall be five in number, to be nominated by the mayor and confirmed by the select council, for the period of three years. The present members thereof shall serve until the expiration of their terms of office respectively, but when their number shall be reduced below five, then the mayor shall nominate persons to fill the vacancies resulting therefrom so that the number shall be always five, but the board of health shall be attached to the department of public safety.

To be attached to  
the department of  
public safety.

36. The director of public safety shall *ex-officio* be a member and president of the board of health, and as chief executive officer thereof, subject to the resolutions and orders of the said board, appoint, supervise and control all the subordinate officers and employes attached to the board.

Art. X, § 1.

Charities and cor-  
rection.

37. The department of charities and correction shall be under the charge of a president, who shall be the head

thereof, and four directors, to which department shall be confided the care, management, administration and supervision of the charities, almshouses, hospitals, houses of correction and all other similar institutions, the control or government of which is intrusted to the city: *Provided*, That no part of this section shall interfere with the municipal hospital or lazaretto as now under the control of the board of health, or with the functions of any board of directors of city trusts now existing, created by any acts of assembly of this commonwealth.

Art. X. § 1.

Municipal hospital and lazaretto to continue under the control of the board of health.

### III. CITIES OF THE SECOND CLASS.

#### Pittsburg.

38. [This act, for the government of cities of the second class, contains similar provisions to those of the act of 1st. June, 1885, P- L. 37, for cities of the first-class.]

14 June, 1887.  
P. L. 395.  
P. D. 2293.

39 There shall be the following executive departments, the heads of which shall be chosen by city councils: I. Public Safety. II. Public Works. III. Charities.

Ibid. § 4.

Executive departments.

40. The care management, administration and supervision of the police affairs, and all matters relating to the public health \* \* \* shall be confided to the department of public safety.

Ibid. § 13.

Public health in hands of department of public safety.

41. \* \* \* \* Sewerage and drainage, and all matters and things in any way relating to the highways, shall be under the direction of the department of public works.

Ibid. § 16.

Sewerage and drainage.

42. To the department of charities shall be confided the care, management, administration and supervision of the charities, almshouses and hospitals and all other similar institutions, the expenses of which are paid out of the city treasury.

Ibid. § 17.

Hospitals.

43. Every practicing physician in cities of the second class, who shall have a patient suffering or affected with small-pox (variola or varioloid), diphtheria, scarlet fever, typhoid fever, typhus fever, yellow fever, cerebro-spinal meningitis or Asiatic cholera, shall forthwith make report thereof to the board of health, describing the street, number and locality of the house or place where the said patient may be located, and for neglecting or refusing so to do, shall be liable to a fine of not less than five nor more than fifty dollars.

25 May, 1883, § 1.  
P. L. 44.

Physicians to make immediate report of contagious disease.

Penalty

23 May, 1883, § 2.

How penalty recovered.

*ibid.*, § 3.

Board of health to institute proceedings

Board of health of Pittsburg.

44. In all cases of the breach of any of these provisions of this act, subjecting the offender to a penalty or fine therefor, the suits for the recovery thereof may be maintained before any mayor, deputy mayor or alderman in like manner as suits for the recovery of debts may now be maintained before them, and upon non-payment thereof a *capias ad satisfaciendum* may issue.

45. All proceedings for the recovery of the fines and penalties imposed and inflicted by the provisions of this act shall be instituted and carried on by the board of health, and in its name and for the use of said board.

46. [The board of health of the city of Pittsburg, consisting of nine members, was established by act 8 April, 1851, P. L. 587, similar in its provisions to those relating to Philadelphia; and investing the board with full sanitary powers, including quarantine laws and the erection of a lazaretto. It has been supplemented as follows: Acts of 8 April, 1852, P. L. 287; 29 March, 1856, P. L. 183; 16 April, 1869, P. L. 1106; 25 February, 1870, P. L. 250; 16 April, 1870, P. L. 1194; 27 February, 1872, P. L. 168; 12 April, 1872, P. L. 1121; 21 April, 1873, P. L. 819. The act, 16 April, 1870, refers especially to registration and interment; that of 12 April, 1872, to the quarantine and lazaretto.]

#### IV. CITIES OF THE THIRD, FOURTH AND FIFTH CLASS.\*

23 May, 1874, § 46,  
P. L. 257, P. D.  
1234. As amended  
11 April, 1876, P.  
L., 24.

Creation of.

How constituted.

47. The city councils of any city of the third, fourth and fifth classes, in which there does not now exist a board of health organized according to law, shall have power to create a board of health as hereinafter provided, and confer upon it any of the following powers:

48. The board of health shall be composed of five members, and shall be constituted as follows: The mayor of such city, who shall be president *ex-officio*, and four

\* By this act, 11 April, 1876, § P. L. 20, P. D. 2039, the cities of this commonwealth was divided into five classes:

1. Population of three hundred thousand or over.
2. Between one and three hundred thousand.
3. Between thirty and one hundred thousand.
4. Between twelve and thirty thousand.
5. Less than twelve thousand.

to be appointed by council; the term of office of said members shall be two years, except that those first appointed shall be classified by councils as follows: Two to serve for two years and two to serve for one year, so that their terms shall expire in one and two years; the members of said board shall serve without compensation; the mayor shall call the first meeting and organize the board of health by taking the chair as president.

23 May, 1874.

Compensation.

Quorum

Appointment of health officers.

Fees to be paid into the treasury.

49. A majority of the whole number of members shall be a quorum; they shall have power to appoint a health officer, a clerk, as many ward or district physicians as they may deem necessary for the proper care of the sick, poor and such other persons as are needful, and to define their duties and salaries before their appointment; all such appointees shall serve during the pleasure of the board; all fees received by them in their official capacity shall be paid into the city treasury monthly.\*

50. Councils may grant such board power to abate and remove all and every nuisance in such city and assess the cost and expense of the same upon the property, which assessment, when duly certified by the president of the board to the city controller, shall become a lien, to be collected the same as any other tax in favor of such city, and for compelling the proprietors or owners, agents or assignees, occupants or tenants of the lot or property, house or building upon or in which the same may be, to abate and remove the same; to regulate the construction and arrangement of water closets,

Cost or removal of nuisances a lien on the property.

Under the act of 25 May, 1887, P. L., 204, they are now classed as follows:

1. Six hundred thousand or over.
2. Between one hundred and fifty and six hundred thousand.
3. Seventy-five to one hundred and fifty thousand.
4. Forty-five to seventy-five thousand.
5. Twenty to forty-five thousand.
6. Ten to twenty thousand.
7. Less than ten thousand.

By sec. 1, Art. XXIII, P. L. 260, of this act, "all laws or parts of laws heretofore passed, whether general or special, relating to the incorporation and government of any of the cities of this commonwealth inconsistent herewith, or supplied by the provisions hereof, are hereby repealed; but no right or interest which has become vested thereunder shall be destroyed or impaired by the operation of this act or by the exercise of any power granted therein."

\*The action of a board of health fixing the compensation of a physician whom they were empowered to employ is conclusive.—*Williamsport v. Richter*, 81 Penn. St. 508.



22 May, 1874.

Registration of  
births, marriages  
and deaths.Powers in case of  
contagious dis-  
eases.Nuisances, power  
to declare and  
abate.Order for removal  
of nuisance may be  
stayed or modified.

privy vaults; also the emptying and cleaning of such vaults; to create and complete an accurate system of registration of marriages, births, deaths and interments occurring in or near such city, for purposes of legal and genealogical investigations and to furnish facts for statistical, scientific, and particularly for sanitary inquiries. When complaint is made, or a reasonable belief exists, that an infectious or contagious disease prevails in any locality or house, to visit such locality or house, make all necessary investigations by inspection, and on discovering that such infectious or contagious disease exists, to send the person or persons so diseased to the pest house or hospital. The council may grant power to make and pass all such orders and regulations as they shall from time to time deem necessary and proper for the public health and for the prevention of diseases; said orders and regulations when adopted shall have all the force and effect of ordinances of such city.

51. Whenever any building, erection, excavation, premises, business, pursuit, matter or thing, or the sewerage, drainage or ventilation thereof, in the opinion of said board of health, whether in whole or in part, (shall) be in a condition or in effect dangerous to life or health, the said board may declare the same, to the extent it may specify, as a public nuisance or dangerous to life, and the said board may order the same to be removed, abated, suspended, altered or otherwise improved or purified, as said order shall specify, and shall cause said order, before its execution, to be served on the owner, agent, occupant or tenant thereof, or some of them; *Provided*, Said parties or any of them are in such city and can be found; and if the party so served shall, before its execution is commenced, apply to said board to have said order or its execution stayed or modified, it shall then be the duty of said board to temporarily suspend or modify said order and to give to such party or parties together, as the case, in the opinion of the board, may require, a reasonable and fair opportunity to be heard before said board and to present proofs and facts against said declaration and the execution of said order, or in favor of its modification; and the board shall enter upon its minutes such facts and proofs as it may receive and its proceedings on such hearing, and thereafter may rescind, modify or reaffirm its said declaration and order and require execution of said original or of a

new or modified order to be made in such form and effect as it may finally determine.

52. The mayor shall have power, and it shall be his duty, to detail from the regular police force of such city, or to make new appointments for the purpose, whenever, in the opinion of the board of health, the public health and sanitary condition of such city may require; such policemen when so detailed, or when appointed, shall be known as the "sanitary police." The number comprising the sanitary police to be determined by the board of health, according to exigencies of the circumstances; and said sanitary police shall be subject to the exclusive direction and control of said board, for the enforcement of proper sanitary measures and for the promotion of the public health; whenever, in the opinion of the board of health, the services of the sanitary police are no longer required, the sanitary condition of the city being clearly such as to render their longer continuance on said duty entirely unnecessary, they shall, on recommendation of the board of health, be returned to duty as regular policemen or be dismissed as the mayor may direct; but no permanent increase of the police force shall be made, without the consent of councils, by ordinance, duly enacted.

23 May, 1874.

Sanitary police.

Under exclusive control of board of health.

53. Said board may take measures and supply agents, and afford inducements and facilities for general and gratuitous vaccination and disinfection, and may afford medical relief to and among the poor of such city, as in its opinion the protection of the public health may require; and during the prevalence of any epidemic disease, may provide temporary hospitals for such purposes.

Gratuitous vaccination and disinfection.

Temporary hospitals.

54. It shall be the duty of said board, on or before the first day of March in each year, to make a report in writing, to the city council of such city upon the sanitary condition and prospects of such city; and such report shall set forth, generally, the statistics of deaths, the action of said board and of its officers and agents, and the names thereof for the past year, and may contain other useful information, and shall suggest any further legislative action deemed proper for the better protection of life and health.

Annual report to city council.

55. Whoever shall violate any provision of this act, or any order of said board of health, made under the authority of the same, or of any law or ordinance therein

Penalty for violations of act, etc.

23 May, 1874.

Fine not to exceed \$100; imprisonment not to exceed ninety days.

Fine not to exceed \$100

Appropriation for expenses.

Proceedings of the public.

Removal of nuisances

Ibid. § 20. As amended 11 April, 1876. P. L. 2-12. P. D., 1218, § 30. 1219, § 36, 38.

Quarantine laws against contagious diseases.

referred to, or shall obstruct or interfere with any person in the execution of any order of said board, or wilfully and illegally omit to obey any such order, shall be guilty of a misdemeanor, and on conviction, shall be subject to fine and imprisonment, or both, at the discretion of the court; such fine shall not exceed one hundred dollars, and such imprisonment shall not exceed ninety days; and all prosecutions and proceedings against any person for a misdemeanor under this act may be had or tried before any judge or tribunal having jurisdiction of any misdemeanors within such city; and any person, corporation or body which may have done or omitted any act or thing which is in this act, or any law or ordinance therein referred to, declared to be or to subject the party guilty thereof to punishment for a misdemeanor, shall, in addition thereto, be subject to a pecuniary liability in the nature of a fine, in an amount not to exceed one hundred dollars, as any court of record or any justice of the peace may decide.

56. Where expenses shall be incurred by the board of health, under the provisions of this act, it shall be the duty of the city council of any city, upon application and certificate from said board of health, to pass the necessary appropriating ordinances to pay the expenses so incurred and certified.

57. The proceedings of the board shall be public, and its journal of proceedings open to the inspection of any taxpayer.

58. The said cities of the third, fourth and fifth classes, coming under the provisions of this act in their corporate capacities, are authorized and empowered to enact ordinances for the following purposes, in addition to the other powers granted by this act:

59. To make regulations to prevent the introduction of contagious diseases into the city, to make quarantine laws for that purpose, and enforce the same within five miles of the city; and,

60. To make regulations to secure the general health of the city, and to remove and prevent nuisances.\*

\* By act 18 March, 1875, cities of the third class which had not accepted the act, were authorized, by a two-thirds vote of the city councils, after a publication in the city or county paper or papers for two weeks, to adopt the second to the eighth clauses of this section, to remain in force therein until they shall have accepted the act, and no longer. P. D., 1219, n.

## V. CITIES OF THE FOURTH, FIFTH, SIXTH AND SEVENTH CLASSES.

61. The councils of any city of the fourth, fifth, sixth or seventh class shall have power by ordinance to create a board of health as herein provided, with the powers and duties herein enumerated.

62. The said board shall consist of five members, who shall serve without compensation and none of whom shall be members of councils. At least two of their number shall be reputable physicians of not less than five years' experience in the practice of their profession. The board shall be appointed by districts to be fixed by councils, representing as equally as may be all portions of the city, and shall serve for the term of five years from the first Monday of April succeeding their appointment. The mayor shall nominate, and by and with the consent of the select council, appoint the members of said board, and shall in like manner remove any or all of them for official misconduct or neglect of duty, and fill all vacancies for the unexpired term. At the first appointment the mayor shall designate one of the members to serve for one year, one to serve for two years, one to serve for three years, one to serve for four years, and one to serve for five years, and thereafter one member of said board shall be appointed annually for the term of five years.

63. The members of the board shall severally take and subscribe the oath herein prescribed for city officers, and shall annually organize by the choice of one of their number as president. They shall elect a secretary, not out of their body, who shall keep the minutes of their proceedings and perform such other duties as may be directed by the board, and a health officer, who shall execute the orders of the board, and for that purpose the said health officer shall have and exercise the powers and authority of a policeman of the city. The secretary and health officer shall each receive such salary as may be fixed by the board, and shall hold their offices during the pleasure of the board, and shall severally give bond to the city, in such sum as may be fixed by ordinance, for the faithful discharge of their duties, and take and subscribe the oath required of the members of the board.

24 May, 1887, § 1.  
P. L., 204.  
Art. XV.

To consist of five  
members.

Ibid, § 2.

Qualifications.

Districts to be  
formed.

Mayor to appoint  
with consent of  
councils.

Removals.

Vacancies.

Term of ap-  
pointees.

Regular term.

Ibid, § 3.

Members to be  
sworn.

Annual organiza-  
tion.

Secretary and his  
duties.

Health officer and  
his duties.

Salaries.

Bonds.



24 May, 1874.  
Fees received to be  
paid into the city  
treasury.

President and sec-  
retary authorized  
to administer  
oaths.

Ibid. § 4.  
Powers and duties  
in case of infectious  
or contagious dis-  
eases.

Hospitals may be  
established.

Physicians and  
sanitary agents  
may be appointed.

Duties of all prac-  
ticing physicians.

Ibid. § 5.  
Abatement of nui-  
sances.

All fees which shall be collected or received by the board, or any officer thereof in his official capacity, shall be paid into the city treasury monthly, together with all penalties which shall be recovered for the violation of any regulation of the board. The president and secretary shall have full power to administer oaths or affirmations in any proceeding or investigation touching the regulations of the board, but shall not be entitled to receive any fee therefor.

64. The said board of health shall have power, and it shall be their duty, to make and enforce all needful rules and regulations to prevent the introduction and spread of infectious or contagious diseases, by the regulation of intercourse with infected places, by the arrest, separation and treatment of infected persons and persons who shall have been exposed to any infectious or contagious disease, and, by abating and removing all nuisances which they shall deem prejudicial to the public health; to enforce vaccination, to mark infected houses or places, to prescribe rules for the construction and maintenance of house drains, waste and soil pipes, and cesspools, and to make all such other regulations as they shall deem necessary for the preservation of the public health. They shall also have power, with the consent of councils, in case of the prevalence or apprehended prevalence of any contagious or infectious disease within the city, to establish one or more hospitals, and to make provision and regulations for the management of the same. The board may, in such cases, appoint as many ward or district physicians and other sanitary agents as they may deem necessary, whose salaries shall be fixed by the board before their appointment. It shall be the duty of all physicians practicing within the city to report to the secretary of the said board of health the names and residences of all persons coming under their professional care afflicted with such contagious or infectious diseases, in the manner directed by the said board.

65. The said board of health shall have power, as a body or by committee, as well as the health officer, together with his subordinates, assistants and workmen, under and by order of the said board, to enter at any time upon any premises in the city, upon which there is suspected to be any infectious or contagious disease, or nuisance detrimental to the public health, for the purpose of examining and abating the same; and all written

orders for the removal of nuisances issued to the said health officer by order of said board, attested by the secretary, shall be executed by him and his subordinates and workmen, and the costs and expenses thereof shall be recoverable from the owner or owners of the premises from which the nuisance shall be removed, or from any person or persons causing or maintaining the same, in the manner herein provided.

24 May, 1874.

Costs and expenses.

66. The said board of health shall have power to create and maintain a complete and accurate system for the registration of all marriages, births and deaths, which may occur within the city, and to compel obedience to the same upon the part of all physicians and other medical practitioners, clergymen, magistrates, undertakers, sextons and all other persons from whom information for such purposes may properly be required. The board shall make, and cause to be published, all necessary rules and regulations for carrying into effect the powers and functions with which they are hereby invested, which rules and regulations shall have the force of ordinances of the city, and all penalties for the violation thereof, as well as, expenses necessarily incurred in carrying the same into effect, shall be recoverable for the use of the city in the same manner as penalties for the violation of city ordinances, subject to the like limitation as to the amount thereof.

Ibid., § 6.

Registration of marriages, births and deaths.

Rules and regulations to be published.

Penalties and expenses to be paid into the city treasury.

67. It shall be the duty of the board of health to submit, annually, to councils, before the commencement of the fiscal year, an estimate of the probable receipts and expenditures of the board during the ensuing year, and councils shall then proceed to make such appropriation therefor as they shall deem necessary; and the said board shall, in the month of January of each year, submit a report in writing to councils of its operations for the preceding year, with the necessary statistics thereof, together with such other information or suggestions relative to the sanitary condition and requirements of the city as it may deem proper, and councils shall publish the same in their official journal. It shall also be the duty of the board to communicate to the State Board of Health copies of all its reports and publications, together with such sanitary information as may, from time to time, be required by said State Board.

Ibid., § 7.

Estimate of receipts and expenditures to be submitted to councils annually.

Annual report

State Board of Health to receive copies of reports.

## VI. SANITARY REGULATIONS OF CERTAIN CITIES AND OF BOROUGHES.

68. [Most of the local health boards throughout the state have been organized pursuant to the powers granted by the acts of 23 May, 1874, P. L., 230 (as amended 14 April, 1876, P. L. 20), for cities of the third, fourth and fifth classes, and 3 April, 1851, P. L. 320, for boroughs (see IV 47, VI 70). The following list of cities and boroughs possessing an organized sanitary department does not pretend to completeness, but those cited serve as examples. In many places reported as having no board of health, the more obvious functions of such a body are discharged more or less thoroughly by the mayor or burgess and councils, through the medium of a sanitary committee. It will be observed that there is an entire absence of that uniformity in municipal sanitary administration throughout the state, which is so desirable in order to enable the central board to maintain satisfactory relations with local boards.]

Allegheny City.

69. The board of health was erected by the following act (19 May, 1873, P. L. 365), which is given in full as a specimen of comprehensive sanitary legislation generally suitable for cities of the third, fourth and fifth classes:

SECTION 1. The presidents of the councils of the city of Allegheny shall annually, at the regular time at which the standing committees of councils are appointed, appoint one member of councils from each ward, who shall constitute a board of health for said city.

SECTION 2. Said council shall annually, at meetings for election of city officers, elect one practicing physician as city physician and physician to the Tombs; the said board of health elect one person as health officer, and may, from time to time, appoint such other officers, agents and servants as may be authorized by councils, for the purpose of carrying on the operations of the board; the salaries and wages of all which said officers, agents and servants, including said physician and health officer, shall first be fixed by councils.

SECTION 3. The present board of health of councils of said city shall continue until a new board shall be appointed under this act, and shall have all the powers and perform all the duties vested in or incumbent upon the board of health under this act.

SECTION 4. That the present health officer shall hold over until the election of his successors under this act. All the officers, agents or servants appointed by the present board shall exercise all the powers and perform all the duties of such officers, agents or servants under this act.

SECTION 5. That the board of health of said city shall have and is hereby invested with full power, when they shall deem it necessary for the protection of the city against any prevailing pestilential or contagious disease, to erect, purchase or lease such public hospitals as may be necessary; and said board, for this purpose, is hereby empowered by and with the consent of the councils of said city to take and appropriate such building or buildings and such ground in such place or places as they may deem necessary: *Provided*, That in case of the owner or owners of such building or buildings or grounds not agreeing with the board as to the price or rent thereof, the same shall be estimated and assessed by a jury of three freeholders, to be appointed by the court of common pleas of Allegheny county; and said board may make such rules, orders and regulations as may be deemed proper for the government of said hospitals, and to appoint such officers and servants as may be deemed necessary for such hospitals.

SECTION 6. Said board may take such measures as they may from time to time deem necessary to prevent the spread of small-pox, by issuing an order requiring all parties in the city, or any part thereof, to be vaccinated within such time as they shall prescribe; and all persons refusing or neglecting to obey such order shall be liable to a fine of not less than five nor more than twenty-five dollars: *Provided*, It shall be the duty of the board to provide at the expense of the city for the vaccination of such persons as are unable to pay for the same.

SECTION 7. Whenever any nuisance shall be found on any premises within the city, contrary to any ordinance, the board are authorized, in their discretion, to cause the same to be summarily abated, in such manner as they may direct.



SECTION 8. In case of pestilence or epidemic disease, or danger from anticipated or impending pestilence or epidemic disease, or in case the sanitary condition of the city should be of such a character as to warrant it, it shall be the duty of the board to take such measures, and to do and order, and cause to be done, such acts for the preservation of the public health, though not herein or elsewhere authorized, as they may in good faith declare the public safety and health to demand: *Provided however*, That the expenditures incurred under this section shall not exceed the appropriations made by the councils of said city for sanitary purposes.

#### PROHIBITIONS.

SECTION 9. No person shall put out, remove or allow to be put out or removed, from the premises or place occupied or owned by him into any street or alley or other public place in said city, any person having any infectious or contagious disease, but such owner or occupant shall immediately report such case to the health officer; and any person who shall violate any clause, or neglect to perform any duty required in this section, shall pay a penalty of not less than ten nor more than one hundred dollars, and may be confined in the county prison not exceeding sixty days.

SECTION 10. No person, master, captain or conductor in charge of any public or private conveyance, boat, vessel or railroad car shall knowingly bring into the city any person or persons diseased of cholera, small-pox, fever or any contagious disease whatsoever, under a penalty of not less than ten nor more than one hundred dollars.

SECTION 11. No person shall erect or continue any privy within forty feet from any street or dwelling, shop or well of another, unless the same be furnished with a substantial vault six feet deep and made tight so that the contents thereof cannot escape therefrom, and be sufficiently secure and enclosed, under a penalty of ten dollars, and the like sum for every week of the continuance thereof after the first conviction.

SECTION 12. No person shall suffer or permit any cellar, vault, private drain, pool, privy, sewer or sink upon any premises belonging to, or occupied by him to become nauseous, foul, offensive or injurious to the public health, under a penalty of not less than five nor more than fifty

dollars, and a like penalty for every day the same shall continue after notice to remove and abate the same.

SECTION 13. No person shall be permitted to remove or cause to be removed any portion of the contents of a privy well, excepting in carts or vehicles so constructed as to be air tight and securely covered on the top, and if any person shall so do or cause to be done, he shall forfeit and pay a fine of twenty dollars for each offense; and any constable or police officer is hereby authorized to seize and detain all carts, vehicles and horses actually taken with any person or persons detected in any violation of this section, and to deliver the same to the board for safe keeping, and as security for the payment of the penalty above prescribed.

SECTION 14. No person shall deposit the contents of any privy at any point within said city, other than such as may be designated by the board for such purpose, or without a permit from the health officer, under a penalty of not less than ten nor more than fifty dollars.

SECTION 15. Any owner or occupant of any oil refinery, tallow chandler's shop, soap factory, tannery, distillery, livery stable, cattle yard or pen, barn, packing house, slaughter house or rendering establishment who shall suffer the same to become nauseous, foul or offensive, shall pay a fine of not less than twenty-five nor more than one hundred dollars.

SECTION 16. If any person, persons or corporations shall own, occupy or keep any grounds or other premises in such condition as to be offensive and a nuisance to the neighborhood, such person shall pay a fine of not less than ten nor more than fifty dollars, and a like fine for every day such nuisance shall continue after the first conviction.

SECTION 17. Every practicing physician who shall have a patient under any malignant, pestilential or infectious disease shall forthwith make report thereof to the board, describing the street, number and locality of the house or place where said patient may be; and for neglecting so to do he shall be liable to a fine of fifty dollars for each and every offense.

SECTION 18. Every undertaker, before burying any person who may have died in said city, shall make report to the board, giving the name of such person, the locality, street and number where the body may be, and such other reasonable matters of information as the board may

require; and for neglecting so to do he shall be liable to a fine of fifty dollars for each and every offense.

SECTION 19. That it shall be unlawful for any person or persons, or corporation, engaged in gathering, or hauling, or carrying bones, greases, dead animals, offal or garbage to do so without having the wagon, cart or vehicle in which the same is so carried or hauled, tightly and securely covered to the satisfaction of the health officer; nor shall any wagon, cart or vehicle used for such purpose be suffered to stand in or upon any street, alley or public place of said city longer than shall be sufficient to transact such business, and in any case not more than fifteen minutes; and any person, persons or corporation violating any of the provisions of this section shall be subject to a fine of not less than five nor more than fifty dollars for each and every offense.

SECTION 20. That all actions for the recovery of any of the fines provided for in this act shall be by summary conviction before the mayor or any alderman of the city; and all fines shall be paid to the treasurer of said city.

#### HEALTH OFFICER.

SECTION 21. The health officer shall carry out all the orders of the board and the laws of the state in relation to the sanitary regulation of the city. He shall from time to time make thorough and systematic examinations of the city and cause all nuisances to be abated. He shall be permitted at all times, from the rising to the setting of the sun, to enter into any house, store, stable or other building and to cause the floor to be raised, if he may deem it necessary, in order to a thorough examination of cellars, vaults, privies, sinks or drains, to enter upon all lots of ground, and to cause all stagnant waters to be drained off, all pools, sinks, vaults, drains or low grounds to be cleansed, filled up or otherwise improved or amended; to cause all privies to be cleansed, and to cause all dead animals or any nauseous or unwholesome thing or substance to be buried or removed beyond the city limits; and the cost and expense thereof shall be collected from the owners of the premises by penal action before the mayor or any alderman; in addition to which the owners or occupants of any such premises shall pay a fine of not less than ten nor more than one hundred dollars, and a like amount for every week in which the nuisance is continued after the first convic-

tion: *Provided*, That notice to abate the said nuisance shall have been giving a reasonable time previous by the health officer to the occupant of such premises, or the owner if known to him.

SECTION 22. It shall be the duty of the health officer to visit and examine all sick persons who shall be reported to him as laboring under any infectious or pestilential disease, and under the advice of the physician to the board, and with the consent of the attending physician, cause all such persons to be removed to the hospital, or such other safe and proper place as he may deem fit, and cause them to be provided with nurses and medical attendance, at their own expense, if they are able to pay the same; but if not, then at the expense of the city.

SECTION 23. It shall be the duty of the health officer, when directed by the physician of the board, or by the board, to cause notice, printed or written in large letters, to be placed upon or near any house in which any person may be affected or sick with small-pox, upon which shall be printed or written "small-pox here." Any person defacing, altering, destroying or tearing down such notice, without the consent of the board or health officer, shall be subject to a fine of not less than twenty-five nor more than fifty dollars. The occupant of any house upon which such notice shall be placed shall be held responsible for the removal of the same; and if removed without consent as aforesaid, such occupant shall be subject to a fine of not less than twenty-five nor more than fifty dollars, unless he shall notify the board or health officer within twenty-four hours after the removal of said notice.

#### OF THE PHYSICIAN

SECTION 24. It shall be the duty of the physician of the board to report to the board the prevalence of any epidemic, infectious or contagious disease, or other causes which, in his opinion, may be detrimental to the public health, and to see that the orders of the board in relation thereto are obeyed as far as practicable; to attend the meetings of the board, and give such information as he may deem important or the board require in relation to the sanitary condition and regulations of the city; to visit any person sick of any infectious, epidemic or contagious disease when required to do so by the health officer or board; to vaccinate all persons not able to pay for



the same; to perform such other duties proper to his position which may be required by the board.

Altoona.

Board of health created by city ordinance 1 July, 1885, under act 23 May, 1874, as amended 11 April, 1876, P. D. 1234.

Bradford.

Board organized under act 23 May, 1874, amended as above.

Carbondale

No board A committee of councils act in that capacity, organized under act 23 May, 1874. P. D. 1234.

Chester.

Board organized under act 23 May, 1874. P. D. 1234.

Corry

Board organized under act 23 May, 1874. P. D. 1234.

Erie.

The board of health derives its powers partly from the special act of 25 March, 1862, §§ 2 and 4, P. L. 173, incorporating the city, which gives the mayor and councils power to enforce certain health regulations, and partly from the act of 23 May, 1874, §§ 20, 46. The right to make quarantine laws is found in § 20, cl. 6.

Harrisburg

Under the act 22 March, 1872, P. L. 500, a joint committee on sanitary affairs, of twelve members from select and common councils, acts as a board of health. There is now in preparation an ordinance, pursuant to act of 23 May, 1874, which will clothe this committee with the powers contemplated thereby for a board. The city now employs two sanitary policemen.

Lancaster.

Board established by special act 5 April, 1867, § 39, providing that "the court of common pleas of said county are hereby authorized to appoint, yearly, a board of health, consisting of five resident real estate owners of said city, who shall serve without compensation."

Lock Haven.

Board of health organized under act 23 May, 1874. P. D. 1234.

Meadville

Board of health organized under act 23 May, 1874. P. D. 1234.

New Castle.  
Reading.

Board organized under act of 23 May, 1874. P. D. 1234.

Board consisting of seven members, created by special act 22 April, 1873, P. L. 831, which went into effect the following March.

Scranton.

Board organized August 30, 1878, under the act of 23 May, 1874. P. D. 1234.

Titusville.

Board organized August 26, 1878, under act of 23 May, 1874. P. D. 1234.

Wilkesbarre.

No board.

Williamsport

Board created by act of 4 April, 1872, a supplement to the act incorporating the city. City councils appoint the board annually which elects a health officer. It is com-

posed of one member from each ward; at least two of them shall be practicing physicians.

### Boroughs.

70. Every borough within this commonwealth that hereafter may be incorporated by an act of the general assembly, or by the court of quarter sessions of any county, shall have power—

3 April, 1851, § 1.  
P. L. 320.  
P. D. 202.

71. To make all needful regulations respecting the foundations and party-walls of buildings, and respecting vaults, cess pools, sinks, drains and partition fences.

Ibid. § 2.  
Vaults, drains, &c.

72. To enter upon the lands and premises of any person or persons, for the purposes authorized by this act, themselves and their duly appointed officers and agents.

Right to enter on lands.

73. To prohibit and remove any obstructions in the highways of the borough, and any nuisance or offensive matter, whether in the highways or in public or private ground, and to require the removal of the same by the owner or occupier of such grounds, in default of which, the corporation may cause the same to be done, and collect the cost thereof, with twenty per centum advance thereon, in the manner provided herein for the cost of pavements made by the corporation.

Nuisances.

74. To prohibit, within the borough, the carrying on of any manufacture, art, trade or business, which may be noxious or offensive to the inhabitants; the manufacture, sale or exposure of fireworks or other inflammable or dangerous articles, and to limit and prescribe the quantities that may be kept in one place, of gunpowder, fireworks, turpentine and other inflammable articles, and to prescribe such other safeguards as may be necessary.

Offensive trades.

Fireworks, etc.

75. To make such regulations relative to accumulations of manure, compost and the like in barns, stable-yards and other places, and to prohibit the keeping of hogs within the borough, or within such limits within the same as they may prescribe.

Accumulations of manure; keeping of hogs.

76. To prohibit within the borough the burial or interment of deceased persons, or within such partial limits within the same as they may from time to time prescribe, and to regulate the depth of graves.

Interments.

77. To make such other regulations as may be necessary for the health and cleanliness of the borough.

Health and cleanliness.

78. It shall be the duty of the chief burgess or other principal corporate officer to preserve order and maintain the peace of the borough, to enforce the ordinances and

3 April, 1851.  
Duties of chief  
burgess.

regulations, to hear complaints, to remove nuisances and exact a faithful performance of the duties of the officers appointed.

Though the mayor of a city is justified in abating a nuisance dangerous to life, health and property, he has no right to direct the summary removal of a building which is not a nuisance *per se*, though its erection is prohibited by law; for such act he is personally liable. *Field v. Stokely*, 11. W. N. C. 344.

Ashley, Luzerne  
county.

79. No board. Sanitary committee, under act of 3 April, 1851, P. L. 320, P. D. 202.

Athens, Bradford  
county.

Health committee, under act of 3 April, 1851, consisting of two members of the common council and a health officer.

Carlisle, Cumber-  
land county.

Board created by act of 28 January, 1873, P. L. 100.

Carmichaels,  
Greene county

Health regulations enforced by the corporate officers of the borough, under act of 3 April, 1851.

Dunmore, Luzerne  
county.

Board organized 1886, under act of 3 April, 1851.

Hollidaysburg,  
Blair county.

No board. The burgess and constables enforce sanitary ordinances.

Jenkintown,  
Montgomery  
county.

Board organized under act 3 April, 1851.

Lebanon, Lebanon  
county.

Board organized under act of 20 February, 1873, P. L. 136, consisting of one member from each ward.

New Cumberland,  
Cumberland  
county.

Board composed of three members, of whom one must be a physician, organized December 7, 1880, under act of 3 April, 1851.

Shamokin, North-  
umberland county.

Board consisting of five members, organized 12 April, 1886, under act of 3 April, 1851.

York, York county.

The act of 1 April, 1873, P. L. 471, authorized the chief burgess and town council of the borough to appoint a health officer, who must be an educated physician; sundry ordinances have been passed pursuant to this act.

## VII. QUARANTINE.

### Port of Philadelphia.

27 January, 1802, § 1.  
P. L., 26.

Bills of health  
granted at ports in  
State of Delaware  
to be recognized at  
lazaretto.

80. In future, such vessels and crews, goods and passengers, beds, bedding and apparel, as shall appear by the certificate of the board of health, or health officer, or (where there is no board of health or health officer) by that of any regular physician and three justices of the peace, at any port or district in the State of Delaware (reciting the quantity and quality, and, if any, the marks and numbers of such goods, beds, bedding and apparel,

and the names of the crew and passengers), to have been landed at least fifteen days within the said state or district, and the said crew and passengers to be in a healthy state, and the said goods, beds, bedding and apparel, to be well aired and purified, and to the best of their knowledge and belief, to be free from contagion and infection, shall, upon due examination of such certificate, by the resident physician or other proper officer at the lazaretto of the port of Philadelphia, be permitted to proceed to Philadelphia or the port or place of their destination, in the same manner as if the said landing, airing and purification had taken place at the said lazaretto: *Provided*, That nothing herein before contained, shall prevent the proper officers at the lazaretto aforesaid, in cases where, after any bill of health as aforesaid has been granted at at any port or place in the State of Delaware, any infectious or contagious disease shall exist, or be suspected to exist on board any such vessel, from directing such further quarantine or detention, cleansing, airing and purification, as in the judgment of the said officers and board of health shall be requisite and necessary for the preservation of the people of the city and port of Philadelphia from pestilential and contagious diseases.

81. The said board shall have and hereby is vested with full power and authority to make general rules, orders and regulations for the government and management of the lazaretto, and the vessels, cargoes and persons there detained, or under quarantine, and of the health office and public hospitals, and for the mode of visiting and examining vessels, persons, goods and houses. And shall also have power to appoint such officers and servants as may be necessary to attend the health office, the lazaretto and the city hospitals, and convey communications and supplies to the said lazaretto and hospital, and such other officers and servants as may be necessary for the preservation of the health of the district; together with all temporary officers and servants that may be rendered necessary by the existence of any dangerous contagious disease in the city of Philadelphia, or in any other place within the United States: *Provided*, That such officers and servants shall not hold any offices of profit or trust under the United States; and to remove any of the officers or servants by them appointed, and to appoint other in their places, and to allow and pay the said officers, and servants, so appointed, such compensation for their respec-

27 January, 1803.

Proper officers at lazaretto may direct further quarantine where any infectious or contagious disease exists.

29 January, 1818, § 1.  
P. L., 38.  
W. D., 17.

Powers of board of health as to quarantine regulations.

May appoint necessary officers and servants.

Such officers not to hold office under the United States



29 January, 1818.

Governor to ap-  
point the lazaretto  
physician, port  
physician, health  
officer and quaran-  
tine-master.

tive services as the said board shall deem just and proper. And the Governor is hereby authorized and required to appoint one physician, who shall reside at the lazaretto, and be denominated the lazaretto physician,† and one physician who shall reside in the city of Philadelphia, and shall be denominated the port physician, one health officer and one quarantine master, all of whom shall be under the direction and control of the board of health.

\* \* \* \* \*

Ibid. § 2.  
P. D. 1557  
W. D. 17.

Fees for certificate  
of health.

American coasting  
vessels from do-  
mestic ports be-  
tween rivers St  
Croix and St.  
Mary.

American vessels  
from domestic  
ports, where they  
have traded from a  
foreign port.

American vessels  
from between  
Sandy Hook and  
Cape Charles.

**82.** The health officer, on receiving from the captain or master of any ship or vessel, the certificate as directed by this act, or where no certificate is to be given, on the arrival of the vessel, shall be entitled to receive from the captain or master, the following sums and no more, and to pay the same over from time to time, as the board may direct, to the treasurer of the board of health, to-wit: All American vessels sailing under coasting documents, arriving at the port of Philadelphia, from any port or place in the United States, between the river St. Croix and the river St. Mary (except ports or places between Sandy Hook and Cape Charles), shall pay two dollars and fifty cents for each arrival during quarantine months; and the said vessels, during that time, shall (if having goods capable of containing contagion, persons, baggage, or clothing from any foreign port or place or any diseased person) stop at the lazaretto, and there be examined by the lazaretto physician and quarantine master, under the rules, regulations and penalties in this act contained. And all American vessels from any port in the United States where they may have touched or traded from a foreign port or place, shall pay the same sum as if they had arrived direct from such port or place.

And all American vessels with coasting documents, arriving from any port or place between Sandy Hook and Cape Charles, including the bay and river Delaware, during quarantine months, having on board merchandise of foreign growth or manufacture, or persons, baggage or clothing from any foreign port or place, or from any place to the northward or eastward of Sandy Hook, or westward of Cape Charles, shall stop at the lazaretto for

† This office is, in respect to the power of removal, completely subject to the legislature. *Commonweath v. Sutherland*, 3 S. & R. 145.

examination, under the rules, regulations and penalties in this act contained; and shall pay for each arrival during quarantine months two dollars and fifty cents.

29 January, 1818.

All American vessels arriving from any port or place in New Brunswick, Nova Scotia, Canada, or the islands or ports adjacent the river St. Marys, the coast of Florida, Bay of Mexico, including New Orleans and ports adjacent, and from thence along the bay of Honduras and coast of Terra Firma, as far as the river Amazon, including all the islands generally denominated West India, Bahamas or Bermudas, shall pay on arrival five dollars.

American vessels from other American ports.

All American vessels arriving from any place in Europe, in the Western, Maderia, Canary or Cape Verde islands, the west coast of Africa, as far as latitude thirty-four degrees south, and from any place in the Mediterranean or straits thereof, or from any place from the river Amazon inclusive, and round the coast of Brazil, as far as latitude thirty-four degrees south, shall pay ten dollars each.

American vessels from Europe, etc.

And all American vessels arriving from any place beyond latitude thirty-four degrees south, or round Cape Horn or the Cape of Good Hope, shall pay twenty dollars each.

American vessels from other foreign ports.

And all foreign vessels arriving as aforesaid (except prizes to American vessels) shall pay twenty-five per cent. each, additional, unless otherwise regulated by any treaty.

Foreign vessels.

Any prize vessels taken by foreign armed vessels, shall pay twenty-five per cent. each, more than is paid by American vessels. And prize vessels taken by American vessels shall pay on arrival ten dollars each. And public armed vessels and privateers shall pay six dollars each.

Prizes.

And any vessel of the burthen of one hundred and fifty tons and upwards, arriving at the lazaretto from any foreign port or coastwise, may come to in the outer channel, as near to the west end of the island of Little Tinicum, opposite the lazaretto, as her draught of water, wind and weather will permit, for the purpose of receiving the visit from the lazaretto physician and quarantine-master.

Public and armed vessels and privateers.

Large vessels may come to in the outer channel.

And if the said vessel does not receive her visit in the the inner channel, she shall pay an additional sum of five dollars, of which two dollars shall be paid to the lazaretto physician, and one dollar to the quarantine-master, as a compensation for their extraordinary services, and two dollars shall be paid into the treasury of the board.

Additional fees in such cases.

29 January, 1818, § 3.  
W. D. 18.

All property vested  
in the old board to  
vest in that organ-  
ized under this act.

Ibid. § 4.  
P. D. 1548.  
W. D. 19.

Vessels from for-  
eign ports to be ex-  
amined at the laza-  
retto.

Penalty for com-  
municating with  
the shore before  
obtaining health  
certificate.

Duties of lazaretto  
physician and quar-  
antine-master.

**83.** The building now called the lazaretto, and the ground therewith reserved and occupied, and all the property and estate of every kind whatsoever now vested in the present board of health, shall become and be fully vested in the [board of health constituted by this act, immediately, and as soon as the same shall be organized, for the uses and purposes for which the said board is instituted and established, and the same shall be fully and entirely under the direction and management of said board; and the said board shall have power to erect such buildings and to make such enclosures on the lot or tract of land adjoining the lazaretto, as to them may seem proper and necessary.]

**84.** Every ship or vessel coming from any foreign port or place, bound to the port of Philadelphia, between the first day of June and the first day of October in every year, shall come to anchor in the river Delaware, as near the lazaretto as the draught of water and the weather will allow, before any part of the cargo or baggage be landed, or any person who came in such ship or vessel shall leave her, or any person be permitted to go on board, and shall submit to the examination hereinafter directed.

And if any master, commander or pilot shall leave his station before the said lazaretto, or if any master or commander shall permit or suffer any part of the cargo or baggage, or any person or persons arriving in such ship or vessel, from any port beyond the limits of the United States, to be landed on either shore of the Delaware bay or river, or suffer any person, except the pilot, to come on board before such examination be duly had and a certificate obtained as hereinafter specified, the person or person so permitting, and the person or persons so landed or going on board (unless imminent danger of the loss of the vessel or lives of the crew shall render assistance necessary), being thereof convicted, upon indictment or prosecution under this act, by verdict, confession or standing mute, in any court having jurisdiction of the offense, shall pay a fine not exceeding five hundred dollars, to be recovered and appropriated as is herein directed.

**85.** And it shall be the duty of the lazaretto physician and quarantine-master, so soon as any ship or vessel shall be anchored near the lazaretto, between sunrise and sunset, immediately, wind and weather permitting, to go on board the same, and there thoroughly examine, in such

form and manner as shall be prescribed by the board of health, the said ship or vessel, the crew, passengers, cargo and baggage on board the same, and to demand answers, under oath or affirmation, to be administered by either the said physician or quarantine-master, who are hereby severally empowered to administer the same, to all such questions as shall be put to any person on board such ship or vessel, touching the health of the crew and passengers during the voyage, and the nature and state of the cargo, as the board of health, by their rules shall from time to time direct to be asked; but it shall be the duty of the person so examining on oath or affirmation, before he shall proceed therein, to make known to the person interrogated the penalty imposed by this act upon the person who shall give false answers, under oath or affirmation, to the questions proposed in such examination.

And if upon such examination, it shall appear to the said physician and quarantine-master that the said ship or vessel came from a port or place at which no malignant or contagious disease prevailed at the time of her departure, that the persons on board such ship or vessel are free from every pestilential or contagious disease (measles excepted), and that the said vessel has had no malignant disease on board, either during the homeward bound voyage or during her continuance in a foreign port, and they shall see no cause to suspect that the cargo or any part thereof is infected, they shall forthwith deliver to the master or captain of such ship or vessel a certificate of the facts, in such form as shall be directed by the board of health.

And the said captain or master may, thereupon, proceed according to his destination, and shall present such certificate at the health office in Philadelphia, within twenty-four hours after his arrival and safely mooring there.

86. But if it shall appear, upon such examination, that the ship or vessel came from a port or place at which a malignant or contagious disease prevailed, such vessel shall be detained at the lazaretto, for such time as the board of health shall deem necessary, not exceeding twenty days.

And the letter-bag of the vessel, when purified, and such letters as the master, commander or passengers shall think proper to write to their owners, consignees or friends, shall be transmitted to the health officer in Phila-

29 January, 1818.

Lazaretto physician and quarantine-master may administer oath.

When health certificate to be given.

Such certificate to be promptly presented at health office.

When vessels to perform quarantine

Letter-bag of quarantined vessel



29 January, 1818.

Cleansing of vessel, &c., at expense of master, owners or consignees.

Certain goods may be immediately landed.

At expiration of quarantine certificate to be given.\*

Further quarantine at discretion of board in case of contagion.

Certificate to be promptly presented.

In case of contagious disease on board, vessel may be further quarantined.

delphia, who shall safely deposit the same in the post-office.

87. And thereupon the board of health shall determine and direct what measures shall be pursued to cleanse the vessel and cargo, purify the clothing and baggage, and restore the health of diseased persons on board, which direction shall be carried into execution under the inspection of the lazaretto physician and quarantine-master, at the expense of the master, owners or consignees of the vessel and goods, respectively, in such manner as by the said orders shall be directed: *Provided always*, That wine, rum, salt, sugar, spirits, molasses, mahogany, manufactured tobacco, dye woods, preserved fruits and such other articles as the board of health shall, by their general regulations, specify and permit, may be conveyed immediately to the city in lighters. And at the expiration of the said time, if it shall appear to the said physician and quarantine-master, that no person has been sick with a malignant or contagious disease (measles excepted) on board said ship or vessel, either during the voyage homeward or during her continuance in a foreign port, nor any of the crew or passengers, or other person from on board such vessel, during the performance of quarantine, and the said physician and quarantine-master shall certify the said facts to the board of health, and that, in their opinion, the vessel, crew, cargo and passengers may be safely suffered to proceed to the city, the said captain or master may proceed with the same according to his destination, unless the board of health shall deem it necessary to cause a further detention of the said vessel or cargo, or of the crew or passengers, or of any baggage on board said vessel, in which case the same shall be detained until the board of health shall authorize the same to proceed and enter the city.

88. And upon the arrival of the said captain or master at Philadelphia, he shall present the said certificate of the physician and quarantine-master at the health office, within twenty-four hours after his arrival.

89. But if upon examination of any vessel by the said physician and quarantine-master as aforesaid, or during the performance of quarantine by any vessel, it shall appear to the said physician or quarantine-master that there has been any person sick on board the said vessel with any malignant or contagious disease, either during the voyage homeward or during the continuance of the vessel

in a foreign port, or during the performance of quarantine at the lazaretto (or that any person on board such vessel has been affected with such disease), then in such case the vessel shall be detained such further time as the board of health may deem necessary. And the cargo and baggage, except such part thereof as, in the opinion of the board of health, may be supposed incapable of retaining infection, which said part may be transported to the city in lighters, shall, unless otherwise ordered and directed by the board of health, be unladen and thoroughly cleansed and purified, and the crew and passengers which were on board the said vessel, and the cargo and baggage on board the same, or any part thereof, except as before excepted, shall not be suffered to enter the city before the first day of October then next ensuing, without the license and permission of the board of health to that effect first had and obtained: *Provided, nevertheless*, That such ship or vessel, after she shall have been thoroughly cleansed and purified, if no malignant disease appear on board, may be allowed to take in freight at the lazaretto, by means of lighters, and proceed to sea.

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Cargo and baggage to be unladen and purified.

Crew and passengers not to enter the city without license.

When vessels may take in freight at lazaretto.

90. And if any master or captain or other person on board any vessel which shall be examined, agreeably to this law, shall not true answers make to all such questions as the lazaretto physician and quarantine master or the said health officer or port physician shall ask, agreeably to this act, or the rules heretofore established, or which shall from time to time be established by the board of health in conformity with this act, or shall knowingly deceive, or attempt to deceive the proper officers as aforesaid in his answers to their official inquiries, he having been duly informed and apprised of the penalties imposed by this act on the person so offending, previous to his said examination, by the person making such examination, such person, for each and every offense, being thereof legally convicted, shall forfeit and pay a sum not exceeding five hundred dollars, to be recovered and appropriated as hereinafter provided and directed, and moreover shall be sentenced to imprisonment at hard labor for any term not less than one year, and not exceeding five years.

Penalty for deceiving health officers.

91. And if any captain or master of any ship or vessel shall neglect to present his certificate at the health office in any case in which he is hereinbefore directed so to do, within the time directed by this act, he shall forfeit and

Penalties for neglecting to present certificate.

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Or for refusing to  
comply with quar-  
antine regulations.

pay the sum of three hundred dollars, to be recovered and appropriated as hereinafter directed.

And if any captain or master of any ship or vessel, or any other person on board the same, shall refuse or neglect to comply with the directions of the lazaretto physician and quarantine master, which shall be made agreeably to this act, or the regulations of the board of health, with respect to the detention of any ship or vessel, or the landing from on board the same, of any person or persons, or of any goods, merchandise, bedding, baggage or clothing, or shall refuse to carry the same into effect, such person, for each and every offense, shall forfeit and pay a sum not exceeding five hundred nor less than two hundred dollars, to be recovered and appropriated as is hereinafter provided and directed.

Ibid. § 5.  
P. D. 1550.  
W. D. 21.

When vessels from  
domestic ports to  
be subject to quar-  
antine.

92. Any ship or vessel coming from any port or place within the United States, at which port or place the said ship or vessel had only called in or touched, upon her arrival from a foreign port or place, shall be liable and subject to all the rules, regulations and restrictions of the preceding sections of this act, and shall be examined and treated, as well the vessel itself as the cargo, crew, passengers and baggage on board, in the same manner as if such ship or vessel had directly arrived at the lazaretto from a foreign port or place, without having first touched at a port or place within the United States.

Such vessels having  
foreign goods on  
board.

93. And all ships or vessels, as well vessels of war as merchant vessels, coming from any port or place within the United States, and bound to the port of Philadelphia, between the first day of June and the first day of October in every year, and having on board any goods or merchandise the growth or produce of any foreign place or country, or any person or persons, bedding or clothing, from any foreign port or place, shall come to anchor opposite the said lazaretto, and shall be examined by the said lazaretto physician and quarantine master. And if the captain or master of any such ship or vessel shall produce such satisfactory proof as the board of health shall in that case direct to be required that the said goods or merchandise shall have been landed in the United States more than twenty days, and are free from damage, and that the said vessel, bedding, clothing and persons are free from the infection of any dangerous contagious disease, the measles excepted, then and in that case the said physician and quarantine-master shall give to the captain

When certificate  
may be given in  
such cases.

or master of such ship or vessel a certificate of the facts, permitting such ship or vessel to proceed to the city, which certificate the said captain or master shall present at the health office in Philadelphia within twenty-four hours after his arrival and safely mooring there. And if he should neglect so to do, being thereof legally convicted under this act, he shall be sentenced to pay a fine of two hundred dollars, to be recovered and appropriated as is hereinafter directed and provided.

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Penalty for neglect to deliver certificate promptly.

94. And if the said captain or master shall fail to produce such satisfactory proof as aforesaid of the wholesome state of the said vessel, goods, merchandise, bedding, clothing and persons, the said vessel, goods, merchandise, bedding, clothing and persons shall be detained at the lazaretto, and shall be proceeded with in the same manner and subject to the same orders and regulations as are hereinbefore provided and directed in the case of vessels coming directly from a foreign port or place.

When such vessels to perform quarantine

95. And if the captain or master of any such ship or vessel coming from any port or place within the United States, and bound to the port of Philadelphia, having on board any goods or merchandise, bedding, clothing or persons, as aforesaid, shall refuse or neglect to come to anchor opposite the lazaretto, and shall pass the same, with intent to proceed to the city without examination by, and certificate obtained from the said physician and quarantine-master as aforesaid, he shall, on conviction, forfeit and pay the sum of five hundred dollars, to be recovered and appropriated as is hereinafter provided and directed, and the said vessels, goods, merchandise, bedding, clothing and persons shall be sent back to the lazaretto, there to be proceeded with in such manner as the board of health, agreeably to this act, shall in that case devise and direct.

Penalty for passing lazaretto without anchoring.

96. When, in the opinion of the board of health, the interests of the port of Philadelphia may require it, and it can be done without prejudice to the health of the citizens, they may suspend the operation of section fifth of the act of 1818 under such rules and regulations as the board of health may make on the subject.

25 March, 1852. § 14.  
P. L. 181.  
P. D. 1551  
W. D. 32.

Board of health may suspend for going section

97. Every ship or vessel coming from the Mediterranean shall be subject to a strict examination under similar regulations and penalties as are provided in the fourth section of this act.

29 January 1818. § 6.

P. L. 38.  
P. D. 1551.  
W. D. 22.

Vessels from the Mediterranean



29 January, 1818.

When from port  
infected with the  
plague.

Ibid, § 7.  
P. D. 1551.  
W. D. 25

Penalty for persons, etc., from foreign ports where there is a malignant disease, entering the city without permission.

Persons and goods first landed at any other port, to perform quarantine.

Ibid, § 8.  
P. D. 1552.  
W. D. 23.

No persons or goods from any infected placed to enter city, without permission.

And if it appears that the said ship or vessel came from any place where the plague existed at the time of her departure, or has spoken with any vessel on board of which any person was afflicted with the plague, or if any person is affected with the said disease on his arrival at the lazaretto, or has been affected during the voyage, the said vessel shall not be suffered to proceed to the city, the cargo and baggage shall be unloaded and thoroughly cleansed and purified, and no part shall be suffered to enter the city without the permission of the board of health first obtained; and the crew and passengers shall perform a quarantine of not less than twenty days nor more than forty, at the discretion of the board of health: *Provided, nevertheless,* That such ship or vessel, after she shall have been thoroughly cleansed and purified, may be allowed to take in freight at the lazaretto by means of lighters and proceed to sea.

98. Any person or persons, and all goods, merchandise, bedding and clothing, arriving at any port or place within the United States from any foreign port or place at which any malignant or contagious disease (measles excepted) prevailed at the time of their departure, or in any vessel in which any such disease existed while they were on board, the same are hereby prohibited from entering the city or county of Philadelphia or the county of Delaware (except the township of Tinicum) at any time between the first day of June and the first day of October in any year, either by land or water, without permission of the board of health first had and obtained, under the penalty of five hundred dollars for each and every offense, and the forfeiture of all such goods, merchandise, bedding or clothing, to be recovered and appropriated as is herein after directed.

99. All goods, wares, bedding, clothing and merchandise, seamen or passengers, landed from on board any ship or vessel belonging to the port of Philadelphia at any other port of the United States shall be subject to perform twenty days' quarantine previously to entering the city or county of Philadelphia, under the same penalty as in the fifth section, without permission first obtained from the board of health

100. No person or persons, goods, wares, merchandise from any port or place at which any malignant or contagious disease (measles excepted) prevailed at the time of their departure, or from on board any vessel in which

any such disease existed while they were on board, shall enter or be brought into the city or county of Philadelphia at any time between the first day of June and the first day of October in any year, by land or water, without the permission of the board of health first obtained, under the penalty of any sum not exceeding five hundred dollars for each and every such offense, and the forfeiture of all such goods, wares, merchandise, bedding and clothing, to be recovered and appropriated as directed by the twenty-ninth section of this act.

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101. Whenever the board of health shall receive information that any malignant or contagious disease (measles excepted) prevails at any port or place within the United States, or on the continent of America, they shall make diligent inquiry concerning the same; and if it shall appear that the disease prevails as aforesaid, all communication with such infected port or place shall be subject to such control and regulations as the board of health may from time to time think proper to direct, and publish in one or more newspapers published in the city of Philadelphia.

Ibid, § 9.  
P. D. 1552.  
W. D. 23.

Board to regulate communication with infected places and publish such regulations.

And thereupon every person or persons, and all goods, wares, merchandises, bedding and clothing, from such infected port or place, and having entered and brought into the city and county of Philadelphia, contrary to such regulations, shall be subject to the penalties and forfeitures provided by the next preceding section of this act.

All persons and goods therefrom subject to such regulations.

And all vessels from such port or place, and bound to the port of Philadelphia shall stop at the lazaretto, and be proceeded with in the same manner, and under the same penalties and forfeitures, as are provided in cases of vessels coming from foreign ports. And every person or persons having entered or been brought into the city or county of Philadelphia, from such infected port or place aforesaid, shall also be conveyed by any person authorized by the board to such place for purification, as the said board may appoint or direct for that purpose, and be there detained at the pleasure of the board, any time not exceeding twenty days, and at the expense of such person or persons.

All vessels therefrom to stop at lazaretto.

Persons improperly entering city to be detained for purification.

102. And if the said board shall have cause to suspect that any person or persons, at the time within the city and county of Philadelphia, have been at such infected port or place, within fifteen days since such

Persons may be required to prove absence from infected ports.

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Where proof not  
furnished.

Ibid, § 10.  
W. D. 24.  
Officers, etc. of  
lazaretto not to ab-  
sent themselves at  
certain times under  
penalty.

Ibid, § 11.  
P. D. 1552.  
W. D. 24.  
Physicians to have  
sick removed to  
proper building  
and to attend them.

Ibid, § 12.  
P. D. 1553.  
W. D. 24.  
How vessels to be  
moored at laza-  
retto.

Cleansing of cargo,  
etc.

disease prevailed at such port or place next preceding, the said board may lawfully require such person or persons to render satisfactory proof of their place or places of abode during the same period.

And if such person or persons neglect or refuse to render such proof, or fail in proving their residence, other than at such infected port or place, every such person shall be dealt with, by purification and detention, as persons coming from such infected port or place.

**103.** No lazaretto physician, quarantine-master, or other officer, or servant of the said lazaretto, shall absent himself from the place of his duty between the first day of June, and the first day of October, on any pretense whatsoever, for any time, without leave first obtained in writing from the board of health, under the hand of the president or chairman for the time, attested by the secretary, and entered on the minutes, under the penalty of forfeiting his office, and a fine of any sum not exceeding five hundred dollars.

**104.** It shall be the duty of the lazaretto physician immediately on the arrival of any ship or vessel liable to be detained at the lazaretto in order to be cleansed and purified as aforesaid, to cause the sick, if any on board, to be removed to the building which shall be appointed by the board of health for their reception, and diligently and impartially, with his best skill, to attend upon and administer medical assistance to each and every sick person that shall be therein lodged, and generally to superintend and cause to be executed such orders and regulations as the said board shall, from time to time, ordain for the government and management of the lazaretto, and of the vessels, cargoes and persons under quarantine.

**105.** It shall be the duty of the quarantine-master, immediately after the arrival and examination as aforesaid, of any ship or vessel liable to be detained at the lazaretto for purification as aforesaid, to direct and cause such ship or vessel to be properly moored near the lazaretto, at such distance from any vessel or vessels under quarantine, as may prevent the communication of any infectious disease to or from the same. And the cargo, bedding and clothing, or any part thereof, contained in such ship or vessel, to be landed, cleansed and purified, under the direction of the lazaretto physician.

And it shall be the particular duty of the said quarantine-master to prevent any personal intercourse between the persons on board different vessels under quarantine; and for that purpose to take possession of and secure the boats of such vessels, from sunset to sunrise of the succeeding day, until their respective terms of quarantine shall be completed, to preserve and enforce order and obedience to this act, and all such orders and regulations as the board of health shall from time to time ordain for the government and management of the lazaretto, and the persons, vessels and cargoes under quarantine.

106. It shall be the duty of the port physician, upon receiving information from the health officer, or other person whomsoever, that any person or persons on board of any ship or vessel, in the port of Philadelphia, is or are afflicted, or suspected to be afflicted, with any pestilential or contagious disease, or that there is just cause to suspect that the cargo, or any part thereof, contained in any such ship or vessel, is infected with any such disease, the said physician, in either of the foregoing cases, shall visit and carefully examine such ship or vessel, and if he shall discover any sick person or persons on board any such ship or vessel, he shall thereupon have and exercise the authority to direct such sick person or persons to be removed to the said lazaretto, or to some other safe place which may be specified by the board of health.

And the said physician shall, without delay, report the state of said vessel, cargo and crew, to the board of health, who shall direct and determine how the crew, passengers, vessel and cargo, shall be disposed of and managed for the restoration of their health and purification. And on the arrival of any ship or vessel in the port of Philadelphia, from any foreign port or place, from the first day of October in any year, to the first day of June in the next succeeding year, it shall be the duty of the said physician, provided such ship or vessel shall not have been previously visited and examined by the physician resident at the lazaretto, and quarantine-master, and before any of the passengers, crew, cargo, or baggage are landed, to visit and carefully examine such ship or vessel, in manner and form as the said lazaretto physician and quarantine-master are bound to do, and to demand answers under oath or affirmation, to be administered by the said port physician, who is hereby empowered to administer the same in conformity with this act.

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Intercourse between quarantined vessels prohibited.

Boats to be secured at night.

Ibid. § 13.  
P. D. 1553.  
W. D. 25.

Duties of port physician when informed of existence of contagion.

To report at once to board of health.

To examine vessels not previously examined at lazaretto.

Port physician may administer oath.



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When to give certificate of health.

107. And if the crew, passengers, vessel and cargo be in a healthy state, and if there shall be no ground to suspect that any of the crew or passengers have died on the voyage of any dangerous contagious disease (measles excepted), or that the cargo, bedding or clothing is infected, then and in such case, the said physician shall give to the master or commander a certificate of the facts, which the said master or commander shall present at the health office, within twenty-four hours after such examination, under penalty of a fine of two hundred dollars; and if he shall neglect so to do, being thereof legally convicted under this act, he shall be sentenced to pay a fine of two hundred dollars, to be recovered and appropriated as is herein provided and directed.

To report in case of suspicion to board of health.

108. And if on examination any suspicion shall arise in the mind of the said physician, touching the health of the crew or passengers, or the infectious state of the vessel, cargo, bedding or clothing on board, no part thereof shall be landed, but the said physician shall immediately report the same to the board of health, who shall direct and determine what measures shall be pursued relative thereto. And every ship or vessel, so as aforesaid arriving at the port of Philadelphia, shall be visited by the port physician previously to her being hauled to any wharf within the city or district aforesaid, or Windmill Island.

Every vessel to be visited by port physician.

Penalty for hauling to wharf before such visit.

And every captain or any other person so hauling such vessel to any wharf as aforesaid, shall, for each and every offense, forfeit and pay the sum of two hundred dollars, to be sued for and recovered as herein provided, unless it shall be made appear that there was at the time imminent danger of the loss of such ship or vessel, or of the passengers or crew thereof.\*

Ibid, § 14.  
P. D. 1554.  
W. D. 26.

Health office to be kept open daily.

109. It shall be the duty of the health officer at seasonable hours, on each day (Sundays excepted), to open and keep a public office, at such convenient place in the city of Philadelphia as shall be directed by the board of health, whereat all masters or captains of vessels shall deliver the certificates or bills of health to them granted by the lazaretto physician and quarantine-master or port physician as aforesaid. And the board

\* The danger must be imminent, that is, impending, threatening, momentary, and the vessel must be in extreme peril to justify its being hauled to the wharf. Board of Health v. Miercken, Dist. Court. Phila. June 16. 1848. MSS.

of health shall there assemble and meet as often as they deem needful. \* \* \* \* And the said health officer shall file and preserve in good order, all the certificates or bills of health so delivered, and shall keep a register of the vessels, and the names of the captains or masters, owners or consignees, for which the same were respectively granted, the port or ports from which the ship or vessel respectively sailed, or at which they touched during their respective voyages, and the number of persons on board thereof respectively at the time of their leaving their respective ports of departure, and also at the time of their arrival respectively at the port of Philadelphia. And the said health officer shall attend the health office at the meetings of the board of health, and at such other times as shall be required for discharging the duties of his appointment, and generally enforce and execute the regulations and instructions of the board of health. And it shall be the duty of the said health officer to collect, recover and receive all forfeitures and penalties imposed, and sums of money directed to be paid by this act.

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Health officer to preserve all bills of health.

Shall keep register of vessels and masters, owners, etc.

Shall attend meetings of board of health.

And collect all penalties.

And give an official bond.

110. And the said health officer shall, before he enters on the duties of his office, give bond with securities to the satisfaction of the board of health, conditioned for the faithful execution of the duties of his office, and to account for all moneys which may come into his hands in performance thereof. And the said bond shall be a lien on the estate of the said health officer and his sureties respectively.

111. The letter-mail shall, during the quarantine season, leave the lazaretto for the health office in the city of Philadelphia, and return twice in each judicial day, at such hours as the board of health shall determine, and shall be free for the transmission of letters to and from persons who may be within the bounds of the lazaretto, or on board of vessels which may be detained there.

Ibid, § 15.  
P. D. 1554.  
W. D. 26.

Letter mail from lazaretto.

And it shall be the duty of the health officer, immediately after the arrival of the lazaretto mail to deposit in the post office the letters received thereby, excepting those which shall be addressed to the board of health and the officers connected therewith.

112. Under the provisions of the fifteenth section of the act, entitled "An act to establish a health office and to secure the city and port of Philadelphia from the introduction of pestilential and contagious diseases, and

11 June, 1832, § 1.  
P. L. 620.  
P. D. 1554.

Further regulations of lazaretto mail.

11 June, 1832.

29 January, 1818, §16.  
P. L., 38.  
P. D., 1554.  
W. D., 27.

Sick persons to be maintained at lazaretto until discharged.

Persons escaping to be apprehended.

Penalty for escaping.

Penalty for harboring escaped persons.

Penalty for escaping from vessel at lazaretto, etc.

for other purposes," passed the 29th day of January, 1818, the board of health of Philadelphia are hereby authorized to send letters and other packages to the lazaretto and to Fort Mifflin, and to receive letters and packages sent from either of said places, to the health office of the said city, once or twice a day, as they may deem expedient.

113. Every diseased person duly landed or sent to the lazaretto, by either of the aforesaid physicians, quarantine-master or health officer, shall be there kept and maintained until the lazaretto physician shall grant him or her a discharge in writing.

And if, before obtaining a discharge as aforesaid, any such person shall elope or otherwise absent himself or herself from the lazaretto, it shall be lawful for the health officer, or any constable or other person whom he shall call to his assistance, and they are hereby enjoined and required to lend such assistance, to pursue and apprehend the person so escaping or absenting himself or herself from the lazaretto, and there again deliver him or her, to be detained until he or she be duly discharged as aforesaid.

114. And moreover, the person so eloping and absenting himself or herself shall, for each and every offense, suffer such temporary confinement in the lazaretto, not exceeding three months, as the board of health shall ordain and award.

And if any master or captain shall knowingly receive or employ on board of his ship or vessel, or if any housekeeper or other inhabitant of this commonwealth shall knowingly receive, harbor or in any way entertain any person so eloping or absenting from the lazaretto, each and every master and captain, and each and every housekeeper or inhabitant so respectively offending, shall, on being thereof legally convicted, forfeit and pay a sum of two hundred dollars.

And if any person arriving in and belonging to any vessel detained at the lazaretto \* \* \* shall elope or absent himself or herself without having first obtained a discharge signed by the lazaretto physician and the quarantine-master, or if any person other than those detained at the lazaretto as aforesaid shall go on board or alongside of any ship or vessel whilst under quarantine as aforesaid, or if any person not authorized by the board of health shall go within the limits of the lazaretto, such person or persons shall perform such quarantine as the

board of health may direct; the person so offending upon legal conviction of such offense, shall forfeit and pay the sum of two hundred dollars, to be recovered and appropriated as hereinafter directed.

115. And if any diseased or other person landed and sent to the lazaretto by any officer having authority to do the same, or any person arriving in or belonging to any ship or vessel detained at the lazaretto as aforesaid, shall refuse or neglect to obey the directions of the lazaretto physician or quarantine-master respectively, agreeably to this act, and the order and regulations by the board of health which shall from time to time be ordained and established for the government and management of the lazaretto and the persons, vessels and cargoes under quarantine, the person so refusing or neglecting shall, for each and every offense, on being thereof legally convicted, forfeit and pay the sum of two hundred dollars, to be recovered and appropriated as hereinafter directed.

116. And the expense and charge of boarding, lodging, nursing, medicine, maintenance and other necessities which shall have been provided for the diseased persons landed and sent to the lazaretto as aforesaid, and also of burying them in case of their death, shall be paid and discharged by the importer, master or captain, owner or consignee of the ship or vessels, respectively, in which such diseased persons were respectively imported, agreeably to the rates in that behalf by the board of health to be ordained and established: *Provided always, nevertheless*, That when the diseased persons are passengers and not servants, the said charges shall be repaid by them, their executors or administrators to the captain or master, owner or consignee, who shall pay and satisfy or be bound to pay and satisfy the same as aforesaid.

The master is liable for expenses of curing seamen sent ashore to hospital whilst sick with an infectious fever.—*Johnson v. Doubty*, 1 Ashmead, 165. The owners of a coasting vessel are liable for attendance to sick seamen.—*Holt v. Cummings*, 102 Penn. St. 212. The provision in the act that there shall be an examination by the lazaretto physician under oath is merely directory and will not affect the right to recover the expenses of healing the sick, though they have been ordered to the hospital before the oath was made.—*Board of Health v. Cope*, Dist. Court. Phila., 22 Dec., 1849, MSS. P. D. 1555, n.

117. When any vessel shall come up to the city of Philadelphia, or the shores of Southwark or the Northern Liberties, although the said vessel may have obtained a certificate of health from the lazaretto physician and quarantine-master, or the port physician, if the said ves-

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Penalty for disobeying directions of physician, etc.

Expenses of sick at lazaretto to be paid by the importer, master, owner or consignee, and repaid by such sick persons.

*Ibid.* § 17.  
P. D. 1555  
W. D. 28

Board may order vessel back to lazaretto notwithstanding health certificate.



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Or remove them  
from place in-  
fected.

Ibid, § 18.  
W. D. 11.

Quarantine of an  
infected house.

sel, shall appear to the board of health to be infected with any contagious disorder, dangerous to the community, the said board are hereby authorized to order the said vessel to the lazaretto, there to undergo the necessary purification, before she will be permitted to return to the said city or the shores thereof aforesaid. And the said board are hereby authorized and empowered to remove any vessel or vessels from any part of the city or shore aforesaid, as shall be infected with such disorders as aforesaid, to such convenient distance as they may deem proper, although such vessel may not be infected.

**118.** Whenever, by means aforesaid, or by the report of the port physician or any other physician appointed by the board of health, whom the said board are hereby authorized to send to places or houses suspected to be infected, it shall come to the knowledge of the said board that any person within the city of Philadelphia, the district of Southwark, the townships of the Northern Liberties, Moyamensing or Penn. is afflicted with any contagious disease, dangerous to the community, it shall and may be lawful for the said board to take orders for preventing the spreading of the contagion, by forbidding and preventing all communication with the infected house or family, except by means of physicians, nurses or messengers to convey the necessary advice, medicines and provisions to the afflicted, and shall exercise all such other powers as the circumstances of the case shall require, and as shall, in their judgment, be most conducive to the public good with the least private injury.

The passage of health and quarantine laws is within the reserved powers of the states.—Board v. Lloyd, 1 Phila. 20. The power of the board of health does not extend to the removal of tenants, and the closing up of their houses, unless justified by the existence of a pestilential disease.—Eddy v. Board of Health, 10 Phila. 94.

Ibid, § 19.  
P. D. 1555.  
W. D. 28.

Pilots not to per-  
form quarantine.

But not to enter  
the city.

**119.** No pilot, bringing a ship or vessel to the lazaretto, in an apparent state of good health, shall be obliged to perform quarantine, but the lazaretto physician shall grant such pilot a certificate permitting him to proceed to the capes of Delaware, in order that he may prosecute his profession; but such pilot shall not, on any pretense, come into the city of Philadelphia, the Northern Liberties, the district of Southwark, or the townships of Moyamensing or Penn. for twenty days from the date of such certificate, under the penalty of one hundred dollars, or one year's imprisonment, which penalty shall be recovered and applied in the manner hereinafter directed.

120. And any pilot bringing to the lazaretto a ship or vessel infected or supposed to be infected with any pestilential or contagious disease, may be permitted to go and remain on shore, within the bounds of the lazaretto, during the time the ship or vessel brought thither shall be detained under quarantine: *Provided always*, That if the said pilot shall be infected with any disease as aforesaid, he shall be detained and treated in the like manner as seamen or passengers so infected are herein directed to be detained and treated: *And provided further*, That if he shall go without the bounds of the lazaretto, he shall be liable to the same penalties as are by this act imposed on seamen or passengers escaping therefrom.

29 January, 1818.

Pilot bringing up infected ship to remain at lazaretto.

121. The buildings and lot of ground situate to the northwest of Bush Hill, in the county of Philadelphia, shall be and continue a public hospital for the city of Philadelphia, the township of the Northern Liberties, and the districts of Southwark, Moyamensing and Penn; and all other persons other than persons on board of any ship or vessel, and liable to be sent as aforesaid to the lazaretto, residing within the city of Philadelphia, the district of Southwark, the townships of the Northern Liberties, Moyamensing and Penn, who shall be afflicted with any pestilential or contagious disease (the measles excepted), may, upon the advice and order of the port physician or any other physician or person authorized by the board of health to grant such order, be removed by the health officer, and such assistance as he shall for that purpose employ, to the said hospital, or to such other place as the physician or board of health shall approve; if the person afflicted with any contagious or pestilential disease cannot be properly and sufficiently attended at home, there to be lodged, nursed and maintained, and kept until duly discharged by a permit in writing, signed by a physician of the said public hospital: *Provided always, nevertheless*, That each and every patient, and his or her estate, shall be liable to pay and reimburse, all the expenses on his or her account incurred in the said hospital, unless the board of health award that he or she shall be exonerated therefrom.

Ibid, § 22.  
W. D. 12.

Hospital near Bush Hill for contagious diseases.

All persons who cannot be properly cared for at home to be sent to hospital.

Patients must bear their own expenses when able.

122. Whenever the said board of health shall receive information that any contagious disease rages in any port or place within the United States, or on the continent of America, they shall make diligent inquiry concerning the same; and it shall and may be lawful for the said board to prohibit and prevent all communication, by land and

Ibid, § 23.  
P. D. 1555.  
W. D. 28.

Board to regulate communication with infected places in America.

29 January, 1818.

water, with such infected ports or places, by stopping all vessels coming into the port of Philadelphia, and at and before the lazaretto, in the same manner and under the same penalties and forfeitures as are hereby provided in cases of vessels coming from foreign ports, and by stopping all persons coming from said infected places, in such manner as the circumstances and exigencies of the case shall require.

Quarantine regulations between infected parts of the city.

And the said board of health are hereby authorized and required, whenever a fever of a contagious nature shall appear in any part of the city of Philadelphia, the district of Southwark, or the townships of the Northern Liberties, Moyamensing or Penn, to adopt, without delay, such prompt measures as will effectually prevent all communication between the part or parts so infected, and any other part of the city, district, or townships. And all judges, justices, sheriffs, constables and other civil officers and citizens of this state are hereby authorized and empowered, enjoined and required, to aid and assist the said board and their officers to the utmost of their power, in carrying into effect such rules, orders and regulations touching the stoppage of such intercourse, or the removal of the infected when they cannot properly be attended to at home, as the board shall order and publish.

Citizens as well as civil officers to aid in enforcing the same.

Ibid, § 24  
W. D. 29.

Boarding-house keepers to report cases of sickness to health officer.

**123.** Every person keeping a boarding or lodging house in the city of Philadelphia, the district of Southwark, or the townships of the Northern Liberties, Moyamensing or Penn, between the first day of June and the fifteenth day of October in any year, shall, within twelve hours after any seafaring man or sojourner shall become sick in such boarding or lodging house, report in writing the name of such diseased person to the health officer. And no master of a vessel or other person whatsoever shall remove any sick person from any vessel lying in the river Delaware, before the city of Philadelphia, the district of Southwark, or the township of the Northern Liberties, before such sick person has been visited by the port physician, and a written permit granted by him for the purpose of such removal. And any person neglecting or refusing to comply with the provisions of this section shall, on legal conviction thereof, be subject to a fine not exceeding fifty dollars, or to imprisonment for any term not exceeding three months; and no person shall hereafter be subject to be punished by imprisonment by virtue of this act without a previous conviction in due

No sick person to be removed from any vessel until port physician has visited him and granted permit.

Penalty.

course of law: *Provided*, That nothing herein contained shall be construed to prevent the board of health from temporarily confining any person within the lazaretto bounds for such time as the said board may deem necessary for the safety of the public.

124. And the quarantine-master shall accompany the lazaretto physician, on the arrival of vessels at the lazaretto, and shall have them moored, and, when necessary, well cleansed and whitewashed, for which he shall be paid in addition to his salary, by the master, owner, or consignee and shall be allowed to charge for lime and brushes the usual prices at which such articles are retailed in the city of Philadelphia. He shall also be authorized to receive all letters and papers to be forwarded to Philadelphia by the lazaretto mail, and by any other conveyance he may think proper. And no person shall be permitted to go on board any vessel under quarantine, except the lazaretto physician and quarantine-master, unless at the request of either of them to perform some necessary service.

And the quarantine-master shall be furnished with such boats and crews as the board of health may judge necessary for having the duties of the lazaretto physician and quarantine-master carried into complete effect, and shall also be furnished with a good spy-glass.

125. [The salary of the health officer is \$2,100.00, payable by councils: acts 8 February, 1853, P. L. 45, P. D. 1554, n., and 23 April, 1864, P. L. 549, W. D. 32. That of the port physician was fixed at \$1,200.00 by act 5 May, 1864, P. L. 820, P. D. 1553, n., and increased to \$1,800.00, by act 6 April, 1870, set forth below.]

126. The health officer in and for the port of Philadelphia, for services rendered in issuing permits or certificates of health to vessels, to the collector of the port and for other purposes, shall receive the sum of two dollars for each and every permit or certificate issued by him, and he is hereby authorized to employ a clerk, at a salary not exceeding twelve hundred dollars per annum; and the port physician of the city of Philadelphia shall receive the sum of six hundred dollars per annum, and one dollar for every vessel examined and health certificate furnished by him; the above payment to be made by the health officer out of the fees received by him, and which payments shall be in addition to those now received by said officers.

29 January, 1818

Ibid, § 30  
W. D. 29.

Duties and privileges of quarantine-master.

Persons not permitted to go on board vessels under quarantine.

Salaries and fees of the various health officers.

6 April, 1870.  
P. L. 979.  
W. D. 32.

Health officer authorized to employ a clerk.



14 March, 1871, § 1.  
P. L. 332.  
P. D. 1549, n  
W. D. 32.

127. Hereafter the annual salary of the lazaretto physician\* shall be \$2,500, and the salary of the quarantine master shall be \$2,000, payable quarterly, and no fee shall be received by either of said officers after the passage of this act.

21 April, 1821, § 1.  
P. L. 210.  
P. D. 1556.  
Supplement to act  
29 January, 1818  
P. L. 38.

Ships from south-  
ward of Cape Fear  
subject to examina-  
tion.  
Masters and pilots  
liable to same re-  
strictions.

128. Between the first day of June and the first day of October, every vessel coming from any port or place southward of Cape Fear, bound to Philadelphia, shall be subject to the examination directed by the fourth section of the act to which this is a supplement, for every vessel coming from any foreign port or place.

And the master or pilot of every such vessel coming from any port or place southward of Cape Fear shall be subject to the same restrictions and liable to the same indictment, prosecution and penalties as by the said fourth section of the said act is prescribed for the master, commander or pilot of any ship or vessel coming from any foreign port or place.

Duties of physician  
and quarantine-  
master

And the same duties shall be performed by the lazaretto physician and quarantine-master, and the same oaths or affirmations shall be by them administered, first making known to the person interrogated the penalty imposed by the said act to which this is supplement; which penalty is hereby extended to every person who shall give false answers, under oath or affirmation to the questions proposed under the authority of this act.

Powers of board of  
health.

And the said physician and quarantine-master, and the master of such vessel, shall proceed in the same manner in all respects as is directed by the said fourth section of the act to which this is a supplement, which penalty is hereby extended to every person, and the board of health shall have the same power to determine and direct what measures shall be pursued, and the same shall be carried in like manner into execution.

Ibid, § 2

Ships from domes-  
tic ports subject to  
examination at cer-  
tain periods.

129. Between the first day of June and the first day of October, every vessel coming from a port or place in the United States, bound to the port of Philadelphia, and

\* Incompatible offices. The resident physician of the lazaretto cannot at the same time hold any office or appointment of profit or trust under the United States government. No person shall, at the same time, be a member of more than one of the following bodies, to-wit: The city councils, the guardians of the poor, the board of health, and the inspectors of the county prison; nor shall any person be a member of any of these bodies who is at the same time a salaried officer under the same or any of them.—Act of 15 May, 1874, §§ 1, 8, P. D. 1274, W. D. 307. Under the act of February 2, 1854, controllers and directors of public schools were included in the above list.—See W. D. 307, sec. 36.

from which vessel shall have been, within thirty days then next preceding, unladen the whole or a part of the cargo or baggage brought, said ship or vessel from some foreign port or place, every such ship or vessel shall be liable and subject to all the rules, regulations and restrictions of the said fourth section of the said act \* \* \* \* to which this is a supplement, and shall be examined and treated, \* \* \* \* as well the vessel itself as the cargo, crew, passengers and baggage on board, in the manner as if such ship or vessel had brought the same cargo, crew, passengers or baggage, directly from such foreign port or place, and had the same then on board at the lazaretto.

2 April, 1821.

130. Between the first day of June and the first day of October, no ship or vessel which shall be laden with or have on board any vegetables, fish or hides, shall be unladen at the port of Philadelphia, until a permit shall be \* \* \* \* applied for and obtained from the board of health. And if any master, captain, owner or consignee or other persons, shall presume to unload from on board of any such vessel, any vegetables, fish or hides without first having applied for and obtained a permit from the board of health, every such master, captain, owner or owners, consignee or consignees or other person, so offending, shall pay a fine not exceeding five hundred dollars, to be recovered and appropriated as is directed in the act to which this is a supplement.

Ibid, § 3.

Vessels laden with vegetables to obtain permits before landing.

Penalty.

131. Between the first day of June and the first day of October, within forty-eight hours after the discharge of the cargo of every ship or vessel at the port of Philadelphia, it shall be the duty of the captain or master, owner or owners, consignee or consignees, and other person having the direction of the discharge of the same, under the penalty of one hundred dollars, to be recovered and appropriated as by the act to which this is a supplement is directed, to give or cause to be given to the board of health, notice that the same cargo is discharged, and to permit and suffer the board of health, by themselves or their lawful agent, by them for that purpose appointed, to examine the condition of the hold, ballast and limbers of such vessel. And if the board of health shall deem it for the safety and health of the city of Philadelphia, are hereby authorized and empowered to designate a proper place to which the said ship or vessel shall be taken, and that her hold, ballast and limbers shall be there cleansed

Ibid, § 4.

Master, etc., to give notice of discharge of cargo.

And permit examination of hold, etc.

Board may direct vessel to be cleansed.

2 April, 1812.

and purified; or at the expense of such captain or master, owner, consignee or other person having the direction of the discharge of the cargo, to send such ship or vessel to a proper place, and to have her hold, ballast and limbers cleansed and purified.

29 March, 1824, § 1.  
P. L. 125.  
P. D. 1557.

**132.** All ships and vessels arriving at the port of Philadelphia, with small-pox on board, shall be subject to the same rules, restrictions and regulations, as are provided and directed in the act to which this is a supplement, in relation to ships or vessels arriving with other malignant or contagious diseases. [See the following act.]

5 April, 1849, § 2.  
P. L. 346.  
P. D. 1557.

**133.** The general health law passed on the 29th day of January, 1818, shall be taken and construed as if the words "small-pox" had never occurred therein. See P. D. 1549, sec. 63.

29 January, 1827, § 1.  
P. L. 28.  
P. D. 1557.

National vessels at lazaretto to have free communication with naval asylum.

**134.** A free and unrestricted communication is hereby permitted between the officers and crews of national vessels which may be detained at quarantine at the lazaretto, in the port of Philadelphia, and the naval asylum on the river Schuylkill, any provisions in the act to which this is a supplement to the contrary notwithstanding: *Provided*, That nothing herein contained shall prohibit the board of health from interdicting communication between the said asylum and the citizens of the city of Philadelphia, whenever, in their opinion, such interdiction may be necessary.

11 June, 1832, § 2.  
P. L. 620.

From and after the first day of July next no health fee shall be charged on any American vessel engaged in the Pennsylvania coal trade.

3 February, 1848, § 8.  
P. L. 19.  
P. D. 155.  
W. D. 31.

**135.** No vessel shall be permitted to leave the lazaretto without first giving security, to be approved by the board of health, for the payment of all expenses of said vessel, and of passengers and other persons imported therein, [for] which said vessels, their captains, owners or consignees are by law made liable.

25 March, 1850, § 4.  
P. L. 268.  
P. D. 1558.  
W. D. 31.

Additional visitation of vessels to guard against contagious diseases.

**136.** For the purpose of more effectually securing the city and port of Philadelphia from the introduction of pestilential and contagious diseases, every ship or vessel arriving from a foreign port shall, in addition to the visitation and examination now prescribed, be visited by the lazaretto physician before passing the lazaretto, or the port physician before being hauled to any wharf within the city or port of Philadelphia, and such lazaretto physician or port physician, as the case may be, shall rigidly examine the baggage, effects and property of the passen-

gers and crew, for which service he shall then receive and pay over to the board of health the sum of fifty cents for each and every person on board such vessel: *Provided*, That in advance of such visit or payment of money, and in lieu thereof the board of health may take security from the master, owner or consignee of the vessel, or importer of or agent for the passengers, conditioned for the payment of all such sums immediately on the arrival of such ship or vessel at the port of Philadelphia. And if any master, pilot, owner or consignee of such vessel, or any other person, shall bring \* \* \* such vessel from the lazaretto, or cause her to be hauled to any wharf, before paying such moneys, or giving security as aforesaid, he or they so offending shall for every such offense forfeit and pay to the board of health the sum of five hundred dollars. \* \* \* [The cities of Pittsburg and Erie possess appropriate quarantine regulations, to which reference must be made to the acts of assembly See III, 46, VI, 78.]

25 March, 1850.

Fees.

Board may take security therefor in advance

Penalty.

## VII. NUISANCES.—GENERAL POWERS FOR THEIR REMOVAL

### Offensive Trades, Cesspools, Pollution of Water Supply, Street Cleaning.

137. [The general statutory law on this subject is contained in the act of 23 May, 1874, set forth above under IV, Cities of the Third, Fourth and Fifth classes. For the general law relating to boroughs, see VI, 68, 69.]

General law

#### General Powers for Removal of Nuisances.

138. The board of health, or a committee of them, shall have power, having first obtained a warrant from a justice of the peace in due form of law, founded on a complaint of two householders, under oath or affirmation, directed to the sheriff of the county of Philadelphia, or his deputy, to enter and search all houses, stores, cellars and other enclosures, between sunrise and sunset,

29 January, 1818, §27.  
P. L. 58.  
W. D. 33.

Power of board of health of Philadelphia to search houses, etc., for nuisances.



29 January, 1818.

Civil process not to be executed under color of such entry.

Nuisances to be removed at expense of owners or occupiers of premises.

Fine in case of neglect.

Board to recover expense of removing nuisances by suit.

where they may have just cause to suspect any nuisance to exist: *Provided, however,* That no sheriff or deputy sheriff shall execute any civil process either by arresting the body or attaching the goods and chattels of any person or persons under color of any entry made for the purposes aforesaid, unless such service could by law have been made without such entry; and all services so made under color of such entry shall be utterly void and the officer making such service shall be considered a trespasser. And it shall be the duty of the said board to cause all offensive or putrid substances and all nuisances which may have a tendency, in their opinion, to endanger the health of the citizens to be removed from the streets, lanes, alleys, highways, wharves, docks or any other part or parts of the city of Philadelphia, the district of Southwark and the townships of the Northern Liberties, Moyamensing and Penn, and to cause such of the privies within the limits aforesaid to be emptied or corrected with lime or otherwise at the expense of the individuals who are the owners of the houses to which the said privies are appurtenant, as the board shall from time to time deem necessary for the health of the inhabitants thereof. And if the owners or occupiers of the premises on which any nuisance may be found, and the owners of the houses to which the said privies are appurtenant, shall, on due notice, thereof, refuse or neglect to have the same immediately removed, emptied or corrected as aforesaid, he, she or they so refusing or neglecting shall forfeit and pay for every such offense any sum not less than twenty nor more than two hundred dollars, to be recovered and appropriated as by this act directed. And the expense attending the removal of such nuisance shall be recovered by the board in any court having lawful jurisdiction from all corporate bodies and individuals, in case due notice has been given to remove the same and a refusal or neglect to do so within the time prescribed by the board.

Private citizens have no right of action for the suppression of a public nuisance unless they aver and prove some special damage to themselves.—*Flanagan v. Phila.*, 8 Phila. 110; *Meckling v. Kittinging Bridge Co.*, 1 Grant, 416; *Fields v. Stokley*, 99 Penn. St. 306; *Yost v. R. R. Co.*, 29 Leg. Int. 85. A court of equity has concurrent jurisdiction with law in cases of nuisance and will proceed by injunction.—*Haugh's Appeal*, 39 Leg. Int. 336. See *Crawford v. Mfg. Co.*, 1 Chester Co. 412. It is no defense to an action for nuisance that the business is necessary and useful to the public.—*Smith v. Phillips*, 8 Phila. 10. Difficulty in removing a nuisance

will not excuse its continuance.—*Biddle v. McCracken*, 13 W. N. C. 514.

**139.** No length of possession whatever of any part of any public street or way within the said city encroached upon shall be available to bar or prevent the correction and removal of any nuisance by buildings, enclosures, or otherwise, which have been or hereafter may be erected or made within or upon any street, lane or alley within the said city.

15 April, 1782, § 11.  
2 Sm. 51.  
W. D. 288.

No length of possession to bar removal of nuisance from a street.

Long-continued use will not give title to a franchise which is an encroachment on a public right.—*Cwlth. v. Phila.*, 16 Penn. St. 79. An act legalizing a public nuisance is liable to be repealed at the pleasure of the legislature; there can be no vested rights under it.—*Wartman v. Phila.*, 33 Penn. St. 202. So a license to erect that which amounts to a nuisance.—*Reading v. Cwlth.*, 11 Penn. St. 196. A license for the continuance of a nuisance, in consideration of an annual payment, confers no rights after the expiration of the year.—*Gilmore v. Wilson*, 53 Penn. St. 194. The board of health have power to fence a lot, if necessary, for the abatement of a nuisance.—*Wistar v. Addicks*, 9 Phila. 145.

**140.** Every owner or owners of vaults, over which a grate or grates are placed, shall cause the said grate or grates to be made of good iron bars, of one inch square, of eighteen inches long, and so in proportion to the length of the bar, the said bar to be laid crosswise of the street, and the space between the bars not to exceed one inch and a quarter; and the said grate or grates shall be fixed in a frame of stone or good red cedar, the scantling of which to be at least six inches square for a bar of eighteen inches long, and so in proportion for the length of the bar, the frame to be laid solid on the wall of the opening of the said vault, and the upper side of the frame nearly level with the pavement, the wall of the opening, with the arch of the vault, and the grate or grates, always to be kept in good repair. And every owner, if a resident within the said city, or tenant of a non-resident owner, who has or may have vaults under any of the public streets, is hereby directed and enjoined to comply with the above regulations, under the penalty of thirty shillings [to be paid to the commissioners for pitching, paving and cleansing the streets, and by them] to be applied toward making, amending and cleansing the same; and the [said commissioners] are hereby directed to make and amend such vaults or grates, which the owners neglect to repair agreeably to this act, out of the public money, and recover the expense thereof, with the forfeiture of such resident owner, or tenant of such non-  
44-16-91.

*Ibid.*, § 13.  
W. D., 288.

Regulations relating to the grates over vaults.

15 April, 1782

Office of street  
commissioners  
abolished.

resident owner respectively, as the case may require, in a summary way, as debts under five pounds are usually recovered. [Office of street commissioners abolished, and the power of providing for the performance of their duties vested in select and common councils.] If any tenant of a non-resident owner shall make or repair the vault, grate or grates, agreeably to this act, it shall be allowed to him by the owner or landlord out of the rent then due, or thereafter to become due.

In a suit against city for the escape of gas into the cellar, digging a vault beyond the curb, contrary to ordinance, was held to be contributory negligence.—*Strawbridge v. City*, 2 Pennyp. 419. An owner who excavates a cellar, and carries the excavation to the curbstone, for the purpose of constructing a vault under it, is bound to have it securely fenced.—*Homan v. Stanley*, 66 Penn. St. 464.

7 April, 1830, § 1.  
P. L. 348.  
B. P. D. 101.Proceedings where  
owner of premises  
on which nuisance  
exists resides out of  
town.

141. It shall be the duty of the board of health in all cases where the owner or owners of unoccupied property upon which a nuisance, in the opinion of the said board, exists, reside out of the city, districts and townships, subjected to the operation of the act to which this is a supplement, or cannot be found by the messenger of the said board, after diligent search made, to cause the said nuisance to be at once removed, and the expenses attending the removal of the same shall be recovered by the said board in any court, or before any court, alderman, or justice of the peace, having lawful jurisdiction, as in and by the said act is provided.

Ibid, § 2.  
W. D. 34.Expenses of re-  
moving nuisances  
to be a lien on the  
premises.

142. The expenses attending the removal of any nuisance shall be and remain a lien upon the premises from which such nuisance has been removed, and it shall be the duty of the said board of health to file the claim therefor against the owner or reputed owner, in the office of the clerk of the district court for the city and county of Philadelphia, which said court shall, in all cases, have jurisdiction of the same, and the said claims may be filed, recorded and proceeded on by *scire facias* to recover the same, in like manner as mechanics' liens are recoverable, upon the trial of which, the fact of the nuisance shall not be inquired into, and the defendant or defendants shall only be permitted to give evidence of payment, or that unnecessary expenses were incurred by the board in the removal of the nuisance.

Upon the trial, the  
fact of nuisance  
not to be inquired  
into.

The form of the claim is regulated by the mechanics' lien law of 1806 (4 Smith, 300), which was in force at the time of the passage of the act.—*Kennedy v. Board of Health*, 2 Penn. St., 366; *Philadelphia v. Gratz Land Co.*, 38 Penn. St. 359; *Phila. v. Van Vrankin*,

39 Leg. Int. 402. The determination of the board of health as to the fact of the existence of the nuisance is final.—*Kennedy v. Board of Health*, *supra*. But to obtain a valid lien for the removal of a nuisance, the board of health must strictly pursue the provisions of the act of 1818; there must be a complaint of two householders and a warrant from a justice.—*Baugh v. Sheriff*, 7 Phila. 82. Where there is no appropriation the city cannot collect from the property owner. The individuals illegally ordering the work are responsible.—*City v. Wistar*, 41 Leg. Int. 15. The advertisement of the sheriff's sale ought, however, to show substantially that the proceedings were under the act of 1830 (see above).—*Board of Health v. Jones*, 1 Miles' Rep. 28. See P. D. p. 1206, n (b). A lien cannot be filed for the removal of a nuisance caused by the act of the corporation itself.—*Phila. v. Edwards*, 2 W. N. C. 182. But a lot owner is liable for a nuisance occasioned by the filling up of a street in front of his property by the municipal authorities.—*Broomall v. Chester*, 1 W. N. C. 228. The board of health in a suit upon a claim for the removal of a nuisance must prove the gist of the action, to-wit, the doing of the work.—*Board of Health v. Pennock*, 1 Clark, 323. But need not state when the work was done.—*Phila. v. Gratz Land Co.*, 38 Penn St. 359. The lot against which the claim is made must be accurately described. A resolution of the board of health declaring that a nuisance exists on lots north and south of Master, between Broad and Thirteenth streets, will not sustain a claim against a lot at the southwest corner of Thirteenth and Master streets.—*Phila. v. Houseman*, 2 Phila. 349. Corporations other than municipal may be indicted for a public nuisance, and if the grantees of the state permit water to escape through the bank of a canal, and to form noisome pools on adjoining lands of another, they are indictable.—*Canal Co. v. Cwlth.*, 60 Penn. St. 367. If two be jointly indicted for a nuisance, and it appear that they acted separately, the jury may convict one and acquit the other.—*Cwlth. v. Milliman*, 13 S. & R. 403. The owner of a town lot is not guilty of a nuisance by filling it up for building purposes though he thereby disturbs the surface drainage.—*Kohn v. Moore*, 4 Leg. Gaz. 46.

7 April, 1830

143. The several provisions of the second section of an act entitled "An act to establish the district court of the city of Philadelphia," passed twenty-eighth day of March, eighteen hundred and thirty-five, and of the first section of the supplement thereto, passed eleventh day of March, eighteen hundred and thirty-six, be and they are hereby deemed and construed to extend to all actions of *scire facias* on claims filed, or to be filed, by the board of health, for removing nuisances under the laws of the commonwealth.

7 May, 1841, § 2.  
P. L. 364.  
W. D. 34.

144. Whenever any nuisance shall be found anywhere within the jurisdiction of the board of health, by reason of the keeping of hogs or other animals, the board of health, in addition to their power of destroying the pens or other enclosures containing such animals, or of otherwise abating and removing such nuisances, be and they

5 April, 1849, § 3.  
P. L. 446.  
W. D. 34.

Board empowered to seize animals and deliver them to guardians of the poor.



5 April, 1849.

But this act not to interfere with well-regulated markets.

are hereby empowered to seize such animals, and deliver them over as forfeited to "The guardians for the relief and employment of the poor of the city of Philadelphia," for the use of said poor, and it shall be the duty of said guardians of the poor, on notice from the board of health, to receive the said animals, and pay the expense of their removal: *Provided*, That nothing herein contained shall be construed to interfere with the keeping of well-regulated markets for the purchase and sale of cattle, excepting swine.

A pig sty in a city is a nuisance *per se*; and it is no defense that it has been in the same place for a long series of years, and is connected with a large and flourishing manufacture.—*Cwlth. v. Van Sickle*, Brightly, 69; *Cwlth. v. Hutz*, Brightly, 75, n.

*Ibid.*, § 5.

Board may remove cause of nuisances.

145. The board of health shall have full power and authority to remove the cause of all nuisances that exist now, or may hereafter be created, in the same manner and by the same authority as the existing laws now authorize them to remove all nuisances.

4 April, 1866, § 1.  
P. L. 487.  
B. P. D. 102.

Extension of powers of board of health in the removal of nuisances.

146. All and singular the powers and authorities now conferred by law on the board of health in the city of Philadelphia, in respect to the removal of nuisances, be and the same are hereby extended to all property situate on any public highway of the said city, and all laws inconsistent herewith are hereby repealed: *Provided*, That to authorize any such removal, the alleged nuisance shall be located within one hundred yards of some dwelling house.

### Offensive Trades.

(SEE ALSO XV. EXPLOSIVES.)

16 March, 1869, § 1.  
5 Sm. 27.  
B. P. D. 917.

Manufacture of turpentine, oil and varnish in Philadelphia regulated.

147. No person shall distil or boil any turpentine or oil, or manufacture or boil any varnish in any house, shop, cellar or other place, to the eastward of Tenth street, in the city of Philadelphia, or within the district of Southwark, or within that part of the township of Moyamensing situate between South street, Seventh street and Passyunk road, or within the incorporated limits of the Northern Liberties, and including the village called Spring Garden, unless the said distilling, boiling or manufacturing be carried on in an open place at least thirty feet distant from any building, vessel of commerce, or other property, which might be injured thereby, or in a completely fire-proof building, the sufficiency of which fire-proof shall be determined and agreed upon by

at least five respectable master bricklayers of the said city, who shall certify the same under their hands, under the penalty of forfeiting the whole quantity of the articles so distilled, boiled or manufactured, together with the sum of two hundred dollars for every such offense.

16 March, 1809.

Penalty.

148. Any alderman of said city, or any justice of the peace in the district of Southwark, the township of the Northern Liberties, or the township of Moyamensing aforesaid, respectively, on information lodged, and demand made by any person, showing a reasonable cause, on oath or affirmation, shall issue his warrant under his hand and seal, empowering any constable of the said city, or district, or proper township, to search any house, shop, cellar or other place within the limits aforesaid, where the said articles are alleged to be distilled, boiled or manufactured, and the said constables upon finding such distillery, boiling of oil, or manufacture to be then going on, may seize and remove the said articles thereupon within the space of twenty-four hours, to some safe and convenient place, and therein detain the same until it be determined in the proper court whether the same be forfeited or not by virtue of this act.

Ibid, § 2.

Constable may search for, seize and remove such articles.

149. The penalties and forfeitures mentioned in this act may be recovered as debts of equal amount are by law recoverable, with costs of suit, the one moiety of which penalties and forfeitures shall go to the guardians of the poor of the city of Philadelphia, the district of Southwark, and the township of the Northern Liberties, or to the overseers of the poor of the township of Moyamensing, respectively, according as the said seizure was made within the said city or district, or either of the townships aforesaid, and the other moiety to the informer or prosecutor who shall sue for the same.

Ibid, § 3.

Penalties, how recoverable. To go one-half to guardians of poor, one-half to informer or prosecutor.

150. If any suit or action be commenced and prosecuted against any person or persons, for anything done in pursuance of this act, every such person or persons may plead the general issue, and give this act and special matter in evidence, and if a verdict shall pass for the defendant, or the plaintiff become non-suit or discontinue this action, or if on demurrer or otherwise, judgment shall be given against the plaintiff, the defendant shall recover treble costs.

Ibid, § 4.

Defendant may recover treble costs.

151. From and after the first day of July next, no bone-boiling establishment, or depository of dead animals, shall be kept or erected within the limits of the city of

2 May, 1855, § 1.  
P. L. 391.  
B. P. D. 802.

Bone-boiling establishments erected without permission of board of health liable to fine and indictment.

16 May, 1857, § 1.  
P. L. 553.  
W. D. 290.

Bone-boiling establishments forbidden.

22 March, 1865, § 1.  
P. L. 564.  
B. P. D. 803.

No bone-boiling establishment to be erected in 1st or 24th wards of Philadelphia.

Board may break up such establishment, and sell implements.

3 April, 1866, § 1.  
P. L. 418.  
B. P. D. 803.

18 April, 1866, § 9.  
P. L. 576.  
W. D. 290.

Poudrette pits for hidden in districts of Moyamensing.

Philadelphia, without permission of the board of health of said city, which is hereby authorized, under the control of the councils of said city, to make all necessary regulations therefor; and every person offending against the provisions of this act shall, for every such offense, and each months continuance of the same after notice, forfeit and pay to the city of Philadelphia the sum of fifty dollars, to be recovered as debts of that amount are by law recoverable, and also be liable to indictment at common law for creating and maintaining a nuisance.

152. No bone-boiling establishment or depository of dead animals, shall be erected within the bounds, in the First division, as now laid out in the present plan of the city, of the First ward, of the city of Philadelphia, and all such establishments and depositories within said ward are hereby declared a public nuisance and punishable as such.

153. No bone-boiling establishments or compost manufactory, or depository of dead animals, shall be erected within the bounds of the First ward and of the Twenty-sixth ward of the city of Philadelphia; and all such establishments and depositories within the limits aforesaid are hereby declared a public nuisance; and the board of health of the city of Philadelphia are hereby empowered to enter the premises wherein such nuisances exist, and destroy the sheds, or inclosures, used for such purposes, and to seize and sell the implements and utensils used in the bone-boiling establishments, or compost manufactory so entered; the net proceeds whereof to be paid over to the said board, for the use of the city of Philadelphia: *Provided*, That this act shall not take effect until first of June next.

154. It shall not be lawful for any person or persons, firms, companies or corporations, to maintain, or to establish, any bone-boiling establishments, or place for boiling dead animals, in that part of the city of Philadelphia west of the river Schuylkill, and now known as the Twenty-fourth ward.

155. It shall not be lawful for any person or persons, body or bodies corporate, to own, occupy, or possess, in the district of Moyamensing, in the county of Philadelphia, any poudrette pit or pits, or deposit places of any kind or description, for the deposit of poudrette or privy filth; any person, or persons, erecting or sinking, or causing to be erected or sunk, or owning any poudrette

pit or pits, or deposit places for poudrette or privy filth in the said district, shall forfeit and pay for every such offense, and for every month that the same shall remain in said district, the sum of five hundred dollars, to be recovered by an action at law, in the district court of the county of Philadelphia, in the name of the commissioners and inhabitants of the district of Moyamensing, one-half of which penalty shall be paid over to the treasurer of the county of Philadelphia, for the school fund of said county, and the remaining one-half shall be recovered for the use of said district.

18 April, 1853

Penalty.

"A glass house, a chandler shop, a swine yard, a pig sty, a pig boarding house, a soap factory, a tallow furnace, a slaughter house, a bone-boiling establishment, a horse-boiling establishment, a mill dam, a melting house of animal fat and tallow, a cotton press, finishing steam boilers, the use of a public place for immigrants, brick burning, laying up wet jute, storing wood naphtha, gunpowder, petroleum or nitro-glycerine, a limekiln, a dye house, a furnace, a smelting house, a smith forge, a livery stable, a tannery, gas works—all are or have been declared nuisances. Some are nuisances *per se*, others are nuisances according to the locality in which they are placed. In offensive trades, either smell or noise may create a nuisance. In dangerous trades the imminent risk of fire or explosion may be sufficient. Carrying on an offensive trade for twenty years in a place remote from building and public roads does not entitle the owner to continue it in the same place after houses have been built and roads laid out in the neighborhood, to the occupants of which, and the travelers upon which, it is a nuisance. As the city extends, such nuisances should be removed to the vacant grounds beyond the immediate neighborhood of the residences of the citizens. This, public policy, as well as the health and comfort of the population of the city demand."—Read, J., in *Rhodes v. Dunbar*, 7 Sm. 275.

A bone-boiling establishment is a public nuisance and if carried on in a populous part of a city will be restrained by injunction; though, when first erected, the neighborhood was sparsely settled. *Smith v. Cumming*, 2 Parsons, 92. So the manufacture of fertilizers producing nauseous odors.—*Roberts v. Thomas*, 13 Lancaster Bar, 62. Lead smelting works may be a nuisance for which an injunction will be granted.—*Penna. Lead Co.'s Appeal*, 96 Penn. St. 116. But not the use of bituminous coal for generating steam in a mill, though it covers the plaintiff's houses and yards with dirt, soot and noxious vapors.—*Galbraith v. Oliver*, 3 Pittsburg, 78. The erection of an abattoir on an improved plan, in a populous city, will not be enjoined, unless the affidavits establish the fact of nuisance; but the court will retain the bill.—*Sellers v. Penna. R. R. Co.*, 10 Phila. 319. Brick burning is not a nuisance *per se*, and it does not necessarily follow that it will be enjoined, because it may produce discomfort or injury to those living near it.—*Hackenstine's Appeal*, 70 Penn. St. 102. So an oil refinery in a rural part of a city.—*Young v. Elkins*, 38 Leg. Int. 204. As to erection of slaughter house, etc., near a cemetery, see XIV, 324 n.



## Cesspools.

6 April, 1853, § 1.  
P. L. 312.  
B. P. D. 804.

Depositing privy  
filth within dis-  
tricts of Kensing-  
ton and Richmond  
forbidden.

Penalty.

16 March, 1855, § 5.  
P. L. 90.  
B. P. D. 804.

Persons depositing  
contents of privy  
well so as to create  
nuisance, subject  
to fine and liable to  
indictment.

156. No privy filth shall be deposited within the Kensington and Richmond districts, in the county of Philadelphia, or outside of said districts, at any place within a mile of the boundary line of the said districts, and any such deposit is hereby declared to be a nuisance, and the party or parties depositing or procuring or causing the same to be deposited, to be guilty of a misdemeanor, and on conviction thereof by the court of quarter sessions for the county of Philadelphia, such party or parties shall, for each offense, be sentenced to pay a fine of not less than twenty dollars nor more than one hundred dollars, or by non-compliance be imprisoned in the Moyamensing prison for a period not less than thirty days nor more than six months.

157. If any person or persons shall deposit the contents, or any part thereof, of a sink or privy well, anywhere within the limits of the jurisdiction of the board of health, so as thereby to create and maintain a nuisance, or shall deposit or spill the same on any street, lane, alley, court, road, bridge or other highway of the city and county of Philadelphia, such person or persons so offending shall for every such offense forfeit and pay to the board of health the sum of ten dollars \* \* \* and shall also be liable to indictment at common law for creating and maintaining a nuisance.

A privy well which leaks into the adjoining property is a nuisance *per se*, without regard to the question of negligence.—*Jacobs v. Worrell*, 15 Leg. Int. 139. A cesspool which contaminates the well of an adjoining property is a nuisance, not justified by necessity.—*Haugh's Appeal*, 102 Penn. St. 42. If the landlord demised the premises with a cesspool so located that its use by the tenant would naturally result in a nuisance, the landlord will be liable.—*Fow v. Roberts*, 16 W. N. C. 307; 108 Penn. St. 489. Where the board of health, in removing the nuisance of a foul privy had *inserted new appliances*, instead of merely removing, the municipal claim therefor was sustained.—*Phila. v. Stewart*, 16 W. N. C. 99.

*Ibid.* § 1.  
P. L. 89.  
B. P. D. 106.

License necessary  
to clean privy  
wells.

158. No person shall remove, or cause or allow to be removed, the contents of any privy well or sink within the limits of the jurisdiction of the board of health without first being licensed by the board of health to do so, and every person offending against the provisions of this section shall, for every such offense, forfeit and pay to the board of health the sum of fifty dollars, to be recovered as debts of that amount are by law recoverable, and also

be liable to indictment at common law for creating or maintaining a nuisance.

159. Every person desirous of being licensed to empty or remove the contents of privy wells and sinks within the limits of the jurisdiction of the board of health shall make application in writing to the board of health, who, on being satisfied with the character of the applicant, and the security and tightness of his carts, and that he is the owner of such horses and carts as represented in his application, and that he is in not in collusion or combination with other persons to deceive and defraud the board, may, under such rules and regulations as they may make in regard thereto, both as to their own protection from fraud and imposition by such person, and as to their supervision and control of such person in his said vocation, grant him a license for one year, and renew the same from year to year, as they may deem proper, and for each license so granted, and every renewal thereof, he shall pay therefor to the board of health the sum of fifty dollars; and whenever any such person shall desire, under his license, to empty or cleanse any privy well or sink he shall first take from the board of health a permit to do so, at which time he shall furnish to the clerk the name of the owner, agent or occupant of such property as shall have so employed him, and the name of such owner, agent or occupant shall be mentioned in said permit and recorded in the office, which permit shall particularly specify the privy well or sink to be emptied or cleansed, and the days or hours in which it shall be done; and if any such person shall, by himself, his agents or servants, remove, cause, or allow or assist in removing the contents of any privy well or sink within portions of said city not excluded from the operation of this act, without having first obtained such permit, or shall do so on any other day or days or at any other hour or hours than those specified in such permit, he shall for every such offense forfeit and pay to the board of health the sum of twenty-five dollars: *Provided*, That nothing herein or in any other act contained shall prevent farmers and others living in rural sections from cleansing their privies without any license and without any penalty therefor.

160. The price of the permit shall be paid to the board of health when issued, and shall in all cases be repaid by the person or persons whose privy well or sink shall be emptied or cleansed, and when such work shall be done

16 March, 1855, § 2.

Persons wishing license to apply in writing.

Must own his horses and carts.

License granted for one year; renewable from year to year.

Permit required for each job.

Penalty for violation.

Exception in favor of farmers, etc.

*Ibid*, § 3.

Price of permit to be repaid by the person for whom work is done.

16 March, 1855.

*Ibid.*, § 4.

Price of permit.

by order of the board of health to any premises declared a nuisance, the price of the permit shall also be recovered by the board of health as part of the expenses of the removal of such nuisance.

**161.** The price of each permit issued in the months of June, July, August and September shall be five dollars; the price of each permit issued at other times shall be fifty cents, except in cases declared by the board of health to be a nuisance, when the price of a permit in those eight months shall be one dollar: *Provided*, That in all cases of permits for removing the contents of privies and sinks which are in the way of building or of improvements, as also for removing the contents of all privies and sinks that have accidentally become a nuisance, the charge for a permit shall be at all times fifty cents. [But see act of 1 May, 1879, P. L. 44, § 1, below, **164.**]

*Ibid.*, § 6.

Every licensed person to give bond in \$200.

Board may revoke license for cause.

**162.** Every licensed person shall give bond to the city of Philadelphia, for the use of the board of health, with surety, in the penalty of two hundred dollars, to be approved by the board, conditioned for the faithful performance of all duties enjoyed by this law and the regulations of the board of health, and for the payment to them of all sums by this act directed to be paid to them; and the board of health shall in addition have power, by a vote of the majority of the whole number of members of the board, to revoke or suspend any license for good cause shown.

*Ibid.*, § 7.

Penalty for employing unlicensed scavenger.

**163.** Every person in the city or county of Philadelphia, whether owner, agent, or occupant of property, who shall employ or contract with any unlicensed person to cleanse his or her privy well or sink, or who shall receive from any unlicensed person any portion of the contents of a privy well or sink emptied and cleansed within the limits of the jurisdiction of the board of health, shall for every such offense forfeit and pay to the board of health the sum of twenty five dollars. \* \* \* \* \*

1 May, 1879, § 1.  
P. L. 44.  
B. P. D. 107.

Price of permit in cities of the first class to be fifty cents and a dollar

**164.** In all cities of the first class in this commonwealth, the price or sum charged and collected by the board of health for each permit to remove the contents of privy wells or sinks, shall be fifty (50) cents during the whole year, excepting in cases declared by the board of health to be a nuisance, when in said cases the price or sum shall be one dollar.

See sec. 4 of the preceding act.

165. It shall not be lawful for any person, or persons, occupying any house or houses, in the city of Philadelphia, at rent, or otherwise, and not being the owner, to deposit any ashes, rubbish, bricks, stones, or cinders, in any privy well attached to such premises; any person, or persons, convicted in the court of quarter sessions of the county of Philadelphia, for any violation of the provisions of this act, shall be punished by a fine not exceeding five hundred dollars, or imprisonment for a period not exceeding two years, in the discretion of the court.

8 April, 1867.  
P. L. 938.  
B. P. D. 108.

166. Boards of health in cities of the first class shall be and they are hereby authorized and directed to adopt and promulgate suitable rules and regulations for the construction of house drainage and cesspools, and to provide for the registration of master plumbers and persons engaged in the plumbing business in said cities: *Provided*, That no cesspools shall be permitted to drain into a sewer: *And further provided*, That nothing in this act shall be construed to apply to cesspools in existence at the present time or their connection with, or drainage into any sewer.

30 June, 1885, § 1.  
P. L. 250.  
[B. P. D. 103.

Regulation of  
house drainage in  
cities of first class.

Plumbers to be  
registered.

No cesspool per-  
mitted to drain into  
a sewer.

167. They shall also establish a system of inspection and supervision over all house drainage and cesspools, and ventilation of the same, and appoint such inspectors as in their judgment may be necessary, at such compensation as may be approved by the councils of said cities.

*Ibid.* § 2

Inspectors to be  
appointed.

168. Any person who shall refuse or neglect to comply with the requirements of said rules and regulations when promulgated, shall be guilty of a misdemeanor, and, on conviction, be sentenced to pay a fine of not more than one hundred (100) dollars, or undergo an imprisonment not exceeding one year, or both in the discretion of the court.

*Ibid.* § 3.

Violation of said  
rules a misde-  
meanor.

Penalty.

This act was held to be constitutional by the court of quarter sessions of Philadelphia county, Arnold, J., in the case of *Cwlth. v. Lambrecht*, 6 May, 1887, which was an indictment for carrying on the business of plumbing without being registered. The indictment was, however, held defective in not stating that the defendant was a *master* plumber. Under the powers vested by this act, the board of health of Philadelphia promulgated an elaborate set of rules and regulations, February 23, 1886. See B. P. D. 103, n.

### Pollution of Water.

169. If any person or persons shall throw, cast, or wilfully suffer to fall into the head-race of the waterworks at Fairmount, or into the water of the river Schuylkill between the south line of Francis street and the head

12 April, 1828, § 2.  
P. L. 315.  
B. P. D. 803, 816.

Polluting the Fair-  
mount reservoirs  
in any way prohib-  
ited.



12 April, 1828.

arches of the said works, or into either of the reservoirs on Fairmount, any dead animal, or any putrid and corrupt thing whatsoever, or any noxious or offensive matter of any kind, or if any person shall go in to swim or bathe in the said race, or either of the said reservoirs, or within the distance of one hundred yards of the said head arches, or shall entice, throw, lead, or conduct any dog or animal therein, every such person shall forfeit and pay a like sum of money, to be recovered in like manner, with costs of suit, before any justice of the peace of the county, or before any alderman of the city of Philadelphia, for the uses aforesaid. (The sum mentioned as a penalty in section one of this act is a sum of not less than five dollars, nor more than fifty dollars, at the discretion of the magistrate.)

7 February, 1832, § 1.  
P. L. 55.  
B. P. D. 804.

Pollution of Fairmount dam with carrion, filth or noxious matter from manufactories prohibited.

Penalty.

170. If any person or persons shall wilfully take, lead, conduct, carry off, or throw, or shall cause to be taken, led, conducted, carried off, or thrown into that part of the river Schuylkill which is between the dam at Flat Rock and the dam at Fairmount, near the city of Philadelphia, any carrion or carcass of any dead horse or other animal, or any excrement or filth from any slaughter-house, vault, well, sink, culvert, privy or necessary, any offal or putrid or noxious matter from any dye-house, still-house, tan-yard, or manufactory, or any matter or liquid calculated to render the water of said river impure, every such person shall, for each and every such offense, forfeit and pay a sum not less than five dollars, nor more than fifty dollars, at the discretion of the magistrate, to be recovered, with costs of suit, in the same manner as debts under one hundred dollars are by law recoverable, by any person who shall sue for the same, before any justice of the peace within the county of Philadelphia, one-half to the use of the person prosecuting and suing, and the other half to the use of the mayor, alderman and citizens of Philadelphia. \*

Ibid, § 2.

No length of possession to bar conviction of a nuisance.

171. No length of possession whatever shall be available to bar or prevent the correction or removal of any nuisance existing, or which may hereafter exist, at or near that part of the river Schuylkill which is between the dam at Flat Rock and the dam at Fairmount.

The following charge, by Judge Thayer of Philadelphia, in the case of *Commonwealth v. Soulas, et al.*, November 25, 1884, is a

\* An action lies for the erection of anything (as a tan-yard) in the upper part of a stream, which renders the water offensive and unwholesome. *Howell v. McCoy*, 3 Rawle, 256.

valuable exposition of the law on the subject of the pollution of water used for drinking purposes: "The case which you are engaged in trying is one of much importance. \* \* \* \* The facts which have been proved on behalf of the commonwealth are few and simple. They are, however, very weighty, and it is my duty to add, have not been contradicted. The law also upon this subject is very plain. The defendants are charged in this indictment with maintaining a common nuisance by causing the excrement and foul water from the water-closets and urinals upon their premises, which are situated upon the bank of the Schuylkill river just above the confluence of the Wissahickon with that stream, to be drained into the river. It has been shown by witnesses, some of whom are experts in such matters, that the effect of this has been to pollute the drinking water of this city, and to render it unwholesome and dangerous. Such pollution has also been shown, by competent and credible evidence, to have a direct tendency to produce disease in those who drink the water \* \* \* \* from the Schuylkill. Now, it is a very old and well settled law that to pollute a public stream is to maintain a common nuisance. It is not only a public injury, but it is a crime, a crime for which those who perpetrate it are answerable in a tribunal of criminal jurisdiction. An act of assembly forbids and punishes as crimes all common or public nuisances, and I know of no public nuisance more serious in its evil effects and more obnoxious to the denunciation of the law than to corrupt and poison a public stream from which large numbers of people obtain their drinking water. If the jury, therefore, find that the defendants have done the acts charged against them in this indictment, no doubt, whatever, remains that they are guilty of the offense of maintaining a common nuisance, and ought to be convicted. If the water drained from the defendants' establishment into the river is of a foul and impure character, and if the effect of that is to pollute the water and render it unwholesome for drinking purposes, then they are guilty as they stand indicted, and it is your duty to say so. It is no defense to say that the premises are in the same condition, and the drainage conducted in the same manner as when they obtained possession and began their occupancy. Their continuance of the nuisance is itself an offense against the law for which they are personally responsible. The law is perfectly well settled that no man can prescribe for a public nuisance, or defend himself by showing that others have violated the law before him. No length of time can justify a public nuisance, although it may furnish an answer to an action for the private injury. Public rights are not destroyed by private encroachments, no matter how long they have endured. Nor is it any defense that the river is also polluted from other sources, that impurities flow into it from sewers, and from towns and places above Manayunk. If the defendants have contributed to the pollution they are guilty. No man can excuse himself for violating the law upon the ground that others also violate it. It is said that the city ought to have built an intercepting sewer. But what of that? Perhaps it ought. But if the city has been guilty of negligence in that respect that fact does not justify the defendants in their violation of the law. It makes no difference whatever in the guilt of the defendants that the city has not taken steps to protect itself against the unlawful acts of those who pollute the stream. Nor ought your verdict to be affected in the slightest degree by the suggestion that if these pollutions of the river are stopped by indictments and con-

7 February, 1832.

7 February, 1882.

victions, the effect may be injurious to large business interests, which are prosecuted under similar conditions upon the river. You have nothing to do with that. Such considerations cannot affect your duty in the present case. The law is to be enforced, and those who violate it are to be punished, no matter what the effect of that may be upon their business, for the law is above every personal and private interest. All persons engaged in business are bound to conduct that business in subordination to the law, and in such manner as not to injure the public. It has been argued also that the city ought to have resorted to a civil remedy against the defendant for the correction of these abuses; that it ought to have gone into a civil court and asked for an injunction against their continuance. Such suggestions have nothing to do with the case. It is sufficient that the defendants are arraigned by the commonwealth to answer for an infraction of her laws. If they have broken those laws, they are in the proper tribunal to answer for their acts. Civil proceedings are slow, and in such proceedings, where the parties are private persons or corporations, \* \* \* many embarrassing and dilatory questions might obstruct and hinder the speedy abatement of the nuisance. In my judgment the remedy which has been chosen is the speediest and the most effective. It is a proper and lawful remedy, and you have no concern now with any other." \* \* \* See Mayor v. Commissioners, 7 Penn. St. 354; City v. Carmany, 18 W. N. C. 152; Coal Co. v. Sanderson, 18 W. N. C. 181.

### Water Supply.

25 May, 1887, § 1.  
P. L. 257.  
P. D. 2194.

Appropriation of  
streams, lands,  
etc., for water  
works or supply  
authorized.

172. Any city, or borough, desiring to erect water works, or to improve its water supply, may, for such purpose, appropriate streams, known as rivers or creeks, lands, easements and rights of way, whether within its territorial limits or not, and, for the purpose of conducting water obtained outside of the territorial limits of any city or borough, may lay pipes across, under and over any lands, rivers, streams, bridges, public highways and cross railroads.

Ibid, § 2.

Agreement as to  
damages.

Prior to any appropriation the city or borough shall attempt to agree with the owner as to the damage done, or likely to be done, to him; if the parties cannot agree, or the owner cannot be found, or is not *sui juris*, the said city or borough may file its bonds in the common pleas court of the county, conditioned for the payment to the owner or owners of the property appropriated of the damages for the taking thereof when the same shall have been ascertained according to law; upon the approval of the bond and its being filed, the right of the corporation to enter upon the property or rights intended to be appropriated shall be complete. Upon petition of either the property owner or the city or borough at any time

thereafter the said court shall appoint five disinterested freeholders of the county to serve as viewers to assess the damages proper to be paid to the owner for the property or rights appropriated, and shall fix a time for their meeting, of which notice shall be given to both parties. When the report is filed either party may appeal and have a jury trial as provided by law.

173. If any person shall wilfully or maliciously do or cause to be done any act or acts whatever whereby any building, construction, reservoir or works of said company, or any water or gas pipe, \* \* \* or any matter or thing appertaining to the same shall be stopped or obstructed, injured, contaminated or destroyed, the person or persons so offending shall be considered guilty of a misdemeanor, and may therefor be indicted in the court of quarter sessions of the proper county, and on conviction thereof shall be punished by a fine not exceeding five hundred dollars or be imprisoned not exceeding one year, or both at the discretion of the court.

174. Whenever any watering trough is erected for the purposes aforesaid [watering horses and cattle] the same shall be public property; and any person or persons wantonly destroying or injuring the same shall be liable to a prosecution before any justice of the peace of the proper county, and if duly proven to the satisfaction of the said justice, shall be punishable by a fine not exceeding twenty dollars, and upon refusing to pay the same together with the costs thereof, may be by the said justice committed to the prison of the county for a period not exceeding ten days.

### Street Cleaning.

175. From and after the passage of this act the board of health of the city of Philadelphia shall have all the powers now vested in the select and common councils of the city of Philadelphia, and in the mayor and board of select and common council, jointly and severally, and in the highway department of said city, relating to the cleaning of streets, markets and public highways of the said city, and the removal of ashes, garbage, refuse and dead animals from the same. [By ordinance of 24th December, 1881, §1, 292, all such powers and duties are imposed upon the department of highways.]

176. Said board of health shall have full power and authority to make and enter into all contracts for cleaning of

25 May, 1887, § 1

Viewers may be appointed on petition of either party.

Meeting of viewers.

Appeal and jury trial.

29 April, 1874, § 34.  
P. L. 93.  
P. D. 1879.

Penalty for injuring water works.

28 April, 1876, § 4.  
P. L. 51.  
P. D. 2076.

Penalty for injuring water troughs.

18 March, 1869, § 1.  
P. L. 397.  
B. P. D. 108 n.

In Philadelphia board of health invested with all powers over cleaning of streets, etc.

Above powers transferred to department of highways.



18 March, 1869, § 2.

Shall make all contracts for street cleaning, and advertise for proposals.

Contract to be awarded to the lowest and best bidder.

*Ibid*, § 3.

Contractors to enter security in such sums as the board decide.

Contracts to be approved by city solicitor.

*Ibid*, § 4.  
W. D. 36.

Contractors to have free use of public hydrants.

*Ibid*, § 5.  
W. D. 36.

Expenses authorized by this act, how met.

the said streets and the removal therefrom of sweepings, manures, ashes, garbage, offal and refuse, and shall advertise in not less than two daily papers published in the city of Philadelphia, for a period of ten days, commencing within twenty days after the passage of this act, for proposals, accompanied with specifications, showing how often and in what manner the proposed work is to be done, and for such periods, not exceeding three years\* from the date of contract; proposals shall be opened at the time and place fixed in said notice, in the presence of the board of health, or a majority thereof, and in the presence of the finance committee, or such of them as may see proper to attend; and the contract shall be awarded to the lowest and best bidder, to be approved by the majority of said board of health and a majority of said finance committee as may be present.

A contract for cleaning the streets in pursuance of an ordinance, must be awarded to the lowest bidder, after advertisement. *McKinley v. Phila.*, 6 Phila. 123.

177. The contractor or contractors shall enter into such security for the faithful performance of said work, in such sum or sums, and in such manner, as shall be approved by the aforesaid board of health, or a majority of them; and in case such contractor or contractors shall fail to perform the duties required by such contract for a period of twenty-four hours after notice duly served upon him or them, said board of health shall have power to have said work done, and the expense thereof shall be charged to such contractor or contractors, and shall be deducted from amount due them; said contracts shall be submitted to and approved by the city solicitor.

178. The water department of the city of Philadelphia shall, under a supervisor of the board of health, grant to the aforesaid contractor or contractors, the free use of the water from the public hydrants of the said city, for the purpose of sprinkling the streets in cleaning the same.

179. Said contract or contracts shall be paid by the city treasurer, in equal monthly payments, upon warrants drawn by the aforesaid board of health; and the mayor, select and common council of the city of Philadelphia are hereby authorized and directed to provide for the expenses authorized by this act in their respective annual tax levies.

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\* Now one year by act 11th June, 1879, §§ 1 and 3, P. L. 130.

## IX. DRAINAGE AND SEWERAGE.

## Swampy Lands.

180. The city of Philadelphia shall have power to construct sewers in the streets of the said city, and to charge therefor the sum of [one dollar and fifty cents] \* for each linear foot against each front, the same to be recovered as liens for the laying of water pipe are recovered in said city, and with the same allowance for corner lots.

8 April, 1864.  
P. L. 324.  
B. P. D. 29.

Construction of  
sewers in Philadel-  
phia.

181. The city of Philadelphia shall have power to construct sewers or drains in the streets of said city and to charge the sum of [one dollar and fifty cents] \* per linear foot against each front; the same to be recovered as liens for the laying of water pipe are now recovered in said city, and with the same allowance for corner lots; and from the passage of this act it shall be lawful for any tenant of any property, wherever the owner or owners of property so assessed for the construction of any sewer or drain, as aforesaid, neglect or refuse to pay the said assessment, the tenant of such property owner may pay the assessment against such property to the contractor, and hand the receipt thereof to the property owner as so much cash paid for rent, as tenants are now required to pay taxes for delinquent property owners.

27 March, 1865, § 1.  
P. L. 791.  
B. P. D. 29 n.

Liens for sewers  
same as for water  
pipe.

In case of property  
owner neglecting  
to pay assessment,  
tenant may do so.

182. All acts or parts of acts which limit the charges made by said city, for the construction of sewers, for paving and for the layings of water pipes, so far as said limitations are concerned, be and the same are hereby repealed; and hereafter all the said charges and rates shall be fixed from time to time, by ordinance of councils.

30 March, 1866, § 1.  
P. L. 354.  
B. P. D. 29.

Councils to fix  
charges and rates  
hereafter.

183. Whenever, in pursuance of an act of assembly, or of an ordinance of the city of Philadelphia, any lot or premises, in said city, shall be connected with the sewers thereof, the entire cost of making such connections shall be a lien upon said lot or premises, in the same manner as the charges or assessments for sewers are by law a lien upon real estate in said city; and the liens therefor may be filed and collected in the same manner as liens for the said sewer charges or assessments are now filed and collected.

10 April, 1867, § 1.  
P. L. 1111.  
W. D. 161.

Cost of making  
sewer connections  
to be a lien on  
premises.

184. The select and common councils of the city of

\* By ordinance 16 Feb., 1869, 47.

20 April, 1869.  
P. L. 1190.  
B. P. D. 29.

Councils to have  
power to construct  
branch sewers  
wherever approved  
by board of sur-  
veys.

Philadelphia shall have power and authority to order and direct the construction of branch sewers in said city whenever the same shall be approved by the board of surveys, and in the opinion of councils shall be required for the health, comfort or convenience of the inhabitants of said city, and the provisions of the act, entitled "A further supplement to the act to incorporate the city of Philadelphia," approved April eighth, one thousand eight hundred and sixty-four, \* shall not be construed so as to apply to the same.

A municipal corporation has power to construct sewers and regulate the use of them without any special statutory authority.—*Fisher v. Harrisburg*, 2 Grant, 291. Councils are the exclusive judges of the question whether the construction of the sewer is requisite to the health, comfort and convenience of the inhabitants.—*Waln v. Phila.* 11 W. N. C. 314. Where a corporation constructs a sufficient culvert it is not responsible in damages, by reason of its subsequently becoming insufficient to carry off the water from an extraordinary fall of rain, in consequence of the increase of population and the greater extent of territory graded and built upon.—*Carr v. Northern Liberties*, 35 Penn. St. 324; *Fair v. Phila.*, 88 Penn. St. 309; *Collins v. Phila.*, 93 Penn. St. 272. But the city is bound to construct its sewer properly and keep it in good condition and repair, and negligence in the performance of these duties will render it liable. The omission to make examination is negligence.—*Vanderslice v. Phila.*, 103 Penn. St. 103; *Kibele v. Phila.*, 14 W. N. C. 393. A municipal corporation may connect its sewers with a natural channel for the flow of water without incurring any liability to keep that channel open to its mouth.—*Munn v. Pittsburg*, 40 Penn. St. 364. The city has no right to construct a sewer in a private alley not dedicated to public use.—*McClintock v. Allegheny*, 33 Leg. Int. 410. The city has no right to drain other than surface water into a small stream running through private property.—*Albertson v. Phila.*, 12 W. N. C. 158. The city may construct a sewer, which empties into a private drain, and assess the property owner for the cost thereof.—*Phila. v. McNeely*, 7 W. N. C. 573; *Phila. v. Church*, 1 W. N. C. 299. Where a stream is directed to be culverted, a contractor for grading the street will not be permitted to fill it up until the culvert is built.—*Sanger v. Phila.* 10 Phila. 338.

23 May, 1874, § 20.  
P. L. 237.  
P. D. 1218.

Powers of cities  
over streets and  
sewers.

185. Cities of the third, fourth and fifth classes, coming under the provisions of this act in their corporate capacities, are authorized and empowered to enact ordinances for the following purposes, in addition to the other powers granted by this act:

186. To open and improve streets, avenues and alleys, make side walks and build bridges, culverts and sewers within the city.

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\* It is the proviso therein, requiring the consent of property owners to the construction of branch sewers, which is repealed.

187. The city council of any city of the third, fourth and fifth classes may provide by ordinance for the division of said city into sewer districts, and may direct the city engineer to make an estimate of the costs and expenses of constructing any main sewer, or reconstructing the same, and to report to the council what portion of said costs and expenses is required for main sewerage, and what portion of the same is required for local sewerage, for any lots and lands to which any portion of such main sewer to be designated by the council, shall serve as a local sewer. And it shall be lawful for the city councils to provide for assessing the costs and expenses of such main sewerage upon the lots and lands within the sewer district where the work is to be done, according to the valuation of the same on the city duplicate, or according to benefits, as they shall determine by ordinance in each case, and to provide for assessing the expenses of such local sewerage upon the feet front of lots and lands, by or through which such portion of any main sewer shall pass, or according to the valuation of the same upon the duplicate aforesaid, or in proportion to benefits upon lots and lands benefited by the local sewerage aforesaid, as they shall determine by ordinance in each case; and if they determine to make an assessment for main or local sewerage or both, according to the benefits, they shall appoint five disinterested freeholders, who, or a majority of them, shall assess the estimated expense of such main sewerage on all the lots and lands in the sewer district, wherein the sewer is to be constructed or reconstructed, in proportion, and the estimated expenses of such local sewerage on such lots and land as will, in their opinion, be benefited thereby, whether fronting on the public ground in which the sewer is to be constructed or reconstructed or not, in proportion, as nearly as may be to the benefits which may result to each lot or parcel of land. Said assessors, or a majority of them, shall, within thirty days after their appointment, make report in writing, specifying the amounts assessed by them upon each lot or parcel of land for main or local sewerage separately, and file the same with the city clerk, within such time as the council shall direct; after the report is filed, the council shall cause not less than ten days' notice to be given in two newspapers of the city of the object of such assessments, and that the same will come before the council for confirmation, at a time to be specified in such notice; ob-

23 May, 1874, § 47.  
P. L. 259, as  
amended by 11  
April, 1876. P. L.  
24, P. D. 1236.

Council may divide  
city into sewerage  
districts.

Assessments upon  
property.

How made.

Assessors to be ap-  
pointed.

Assessors to re-  
port in writing.



23 May, 1874

Objections to assessments.

Council may set aside assessment.

jections to the assessments shall be in writing and filed with the city clerk, and objections may be heard before the city council at the time specified in the notice; the council may set aside such assessments, or they may, after hearing objections, confirm the same. If the council set the first or any other assessment aside, they may appoint other assessors of the same qualifications as hereinbefore provided, cause new assessments to be made, and the proceedings shall be the same as is provided for in the first assessment; but not more than two views or assessments shall be made in any one year.

When a municipality undertakes the construction of a sewer, it is its duty to construct it properly, and to keep it in good condition and repair, otherwise it is liable in damages. *Vanderslice v. Phila.*, 103 Penn. St. 102.

Collection of assessments.

188. After making any assessment for main or local sewerage according to valuation, or for local sewerage according to feet front, or after the confirmation of any assessment for main or local sewerage made according to benefits, the council may order such percentage of the assessment for main sewerage as may be necessary to pay the estimated costs and expenses of main sewerage, for such portion of any main sewer as the council shall have determined to construct or reconstruct, together with the total assessment for local sewerage, for such portion of any main sewer, or the assessments aforesaid by valuation or feet front, to be certified to the city solicitor, and collected as other taxes are collected; and such assessments shall be called sewerage tax, and claims for same shall be registered in (the) city lien docket as unpaid school and city taxes on real estate are by this act directed to be registered, and the same shall be from the time of such assessment, liens on such lots and lands in the hands or possession of the owner or owners thereof, their heirs and assigns, the same as other city taxes, and subject to the same penalties, if delinquent; and it shall be lawful for the city councils to cause said assessments to be collected before the work is contracted for.

Sewerage tax a lien.

Ibid. § 48  
P. D. 1237.

189. It shall be lawful for the city council of any such city to provide by ordinance for the construction, in any street or public highway within such city, of the proper house connections, branches leading in all main or branch-sewers, and also water-pipes and gas-pipes in such streets or highways, and to assess the cost and expenses thereof upon the lots or parcels of land for the accommodation of which such connections, branches and pipes may be con-

structed: *Provided*, That in no case, except in a sanitary measure, of which councils shall judge, shall such city councils require said house-connection to be built further from such sewer than to the inner line of the curbstone of such street or highway.

190. The councils of any city of the fourth, fifth, sixth or seventh classes may provide by ordinance for the division of said city into sewer districts, and may direct the city engineer to make an estimate of the cost and expense of constructing any main sewer, or reconstructing the same, and to report to councils what portions of said cost and expense is required for main sewerage, and what portion of the same is required for local sewerage, for any lot or lands to which any portion of such main sewer, to be designated by councils, shall serve as a local sewer; and it shall be lawful for the city councils to cause sewers of all kinds to be constructed or reconstructed without petition therefor from the property owners, and to provide either to pay for such sewerage out of the general revenue of the city, or for assessing the cost and expense thereof as follows, namely: In the case of main sewers, such proportion of the cost and expense of the same as is required for local sewerage shall be assessed upon the property abutting thereon, by an equal assessment by the foot front, or according to the assessed valuation of the same for purposes of city taxation, or in proportion to benefits upon lots or lands benefited by such local sewerage, as councils shall by ordinance in each case determine, and the cost of such main sewer, over and above the portion thereof assessed for local sewerage as above provided, shall be assessed upon the lots or lands within the sewer district where the work is to be done, according to the valuation of such lots or lands for city purposes, or according to benefits, as councils may by ordinance in each case determine. The cost of lateral sewers shall be assessed upon the lots or lands along or through which such lateral sewers run, according to the valuation of such lots or lands as aforesaid, or in proportion to benefits upon lots or lands benefited, or by an equal assessment by the foot front upon the lands along or through which such sewers run, as councils may by ordinance in each case determine.

191. If councils determine to make an assessment for main, local or lateral sewerage according to benefits, they shall appoint three disinterested citizens, who, or a ma-

23 May, 1874.

24 May, 1887, Art.  
XVII, § 1.  
P. L. 204.

Sewerage districts.

Estimates to be  
made by the city  
engineer.

Main and local  
sewerage.

Councils may order  
construction of  
sewers and provide  
for their payment.

Assessment upon  
property abutting  
thereon.

Lateral sewers.

*Ibid*, § 2.

How sewerage as  
assessments are to be  
made.

24 May, 1887.

majority of whom, shall assess the estimated expenses, as reported by the city engineer, of such main sewerage, on all the lots or lands in the sewer district wherein the sewer is to be constructed or reconstructed, in proportion to benefits, and the estimated expenses, as reported by said engineer, of such local or lateral sewerage on such lots or lands as will, in their opinion, be benefited thereby, whether fronting on the ground in which the sewer is to be constructed or reconstructed, or not, in proportion as nearly as may be to the benefits which may result to each lot or parcel of land.

*Ibid*, § 3.  
Report of assessors  
to be filed.

Notice of the filing  
of the report to be  
given.

Objections to said  
report.

Assessments may  
be modified, set  
aside or confirmed.

Re-assessment.

*Ibid*, § 4.  
Collection of such  
assessments.

In default of pay-  
ment, lien therefor  
may be entered in  
the prothonotary's  
office.

Interest on liens.

*Ibid*, § 5.  
Branch sewers and  
house connections.

192. Said assessors, or a majority of them, shall, within thirty days after their appointment, make report in writing, specifying the amount assessed by them upon each lot or parcel of land for main or local sewerage separately, and file the same with the city clerk within such time as the councils shall direct. After the report is filed, the councils shall cause not less than ten days' public notice to be given, in two newspapers of the city, of the object of such assessments, and that the same will come before them for confirmation at a time to be specified in said notice. Objections to the assessment shall be in writing and be filed with the city clerk, and may be heard before the city councils, in joint convention, at the time specified in the notice. Councils may, after hearing objections, modify, set aside or confirm said assessments. If the councils set aside the first or any other assessments, they may appoint other assessors of the same qualifications as hereinbefore provided, and cause new assessments to be made, and the proceedings shall be the same as herein directed in case of the first assessment.

193. After making assessments for sewerage of any kind, councils may direct that they be certified to the city treasurer, or to such party as said assessments may be assigned to, for collection; and if such assessment be not paid within such time as councils may by ordinance prescribe, it shall be lawful to file liens therefor in the prothonotary's office of the proper county, as provided by this act, and said liens shall bear interest from the time the assessments were payable at the rate of six per centum per annum until paid.

194. The city councils may provide, by ordinance, for the construction in any street or public highway within such city of all proper house connections and branches leading into main or lateral sewers, or connecting with

gas, water, steam or other pipes in said streets or highways which they may deem necessary; *Provided*, That in no case, except as a sanitary measure, of which councils shall judge, shall they require such house connections to be extended further from such sewers or from such gas, water, steam or other pipes than to the inner line of the curbstone of such street or highway. Councils may provide for the assessment of the cost and expense of such connections upon the lots or parcels of land for the accommodation of which such connecting branches and pipes may be constructed, or may collect the same from the owner or owners of such lot or lots, or parcels of land, by action of debt, or from the persons or corporations owning or operating such gas, water, steam or other pipes. Councils may also notify such owners to make such connections within such time as they may direct, and in default of compliance with such notice cause the said connections to be made, and collect the cost thereof from the parties owning or operating such gas, water, steam or other pipes, with interest.

24 May, 1887.

Extent of such connections.

Assessment of the costs and expenses of such connections.

When councils may cause connections to be made.

### Swampy Lands.

195. Any swampy or wet lands belonging to several owners disjunctly may be drained at the common expense under the following regulations:

5 April, 1870, § 1  
P. L. 47.  
P. D. 81.

196. Upon the petition of the majority of said owners of such wet or swampy lands forming a continuous swamp or marsh the court of quarter sessions of the county, or if lying in two counties the nearest court shall appoint three disinterested persons, who shall be commissioners with power to view the wet lands described; and if in their judgment to drain them shall be practicable, they shall proceed to lay out and drain, measuring the length and ascertaining the depth, as near as may be with ordinary facilities; they shall also have power, and it shall be their duty, to make a survey of such swampy or wet land to get its contents and quantity owned by each landholder, and make an estimate of the cost of constructing said drain.

Ibid, § 2.

Upon petition of majority of owners three commissioners to be appointed.

197. If, in the judgment of the commissioners, the swamp is a public nuisance, then they shall have power to say what portion of the expense shall be borne by the township or townships in which said swamp lies.

Ibid, § 5.

In case swamp be a nuisance.



## X. ADULTERATION OF FOOD.

### Pleuro-Pneumonia; Milk, Butter, Cheese, Oleo-margarine; Liquors.

23 May, 1874, § 20  
P. L. 237.  
P. D. 1218.  
As amended by  
act 11 April, 1876,  
P. L. 21-2.

Power of cities of  
third, fourth and  
fifth classes to reg-  
ulate markets.

3 April, 1851, § 1.  
P. L. 320.  
P. D. 202.  
§ 42-58.

Power of boroughs  
over market.  
§ 2, XI.

198. Cities of the third, fourth and fifth classes coming under the provisions of this act in their corporate capacities are authorized and empowered to enact ordinances for the following purposes, in addition to the other powers granted by this act: \* \* \* To purchase and own grounds for and to erect and establish market houses and market places, and to regulate and govern the same. \* \* \*

199. Every borough within the commonwealth that may hereafter be incorporated by an act of the general assembly, or by the court of quarter sessions of any county, shall have power—

To make all needful regulations respecting markets and market days, the hawking and peddling of market produce and other articles in the borough. \* \* \*

By the common law of Pennsylvania every municipal corporation that has power to make by-laws and establish ordinances to promote the general welfare and preserve the peace of the town or city may fix the times or places of holding public markets for the sale of food and make such other regulations concerning them as may conduce to the public interest. And the right to establish a market includes the right to shift it from place to place when the convenience or necessities of the public demand it.—*Wartman v. Phila.*, 33 Penn. St. 302. See *Danville v. Peters*, 8 Luz. Leg. Reg. 273.

18 March, 1775, § 7.  
1 Sm. 425.  
B. P. D. 325.

Adulteration of  
flour

200. If any person or persons shall adulterate or mix any improper and unwholesome ingredient in any kind of flour of which bread shall be made as aforesaid, every such person or persons, being thereof legally convicted before any magistrate or justice of the city, borough or county where such bread shall be so made, sold, or exposed to sale, who is hereby authorized and empowered to hear, try and determine the same, shall forfeit and pay the sum of five pounds for every such offense.

6 April, 1802, § 1.  
3 Sm. 530.  
P. D. 1146.

Provisions not to  
be resold in the  
same market.

201. It shall and may be lawful for any person or persons to sell or expose to sale provisions, vegetables or fruit in the markets of any city, borough or corporate town within this commonwealth: *Provided always*, That such provisions, vegetables or fruit shall not have been previously purchased within the limits of such city, borough or corporate town.

202. It shall not be lawful for any butcher or other person to expose for sale any tainted or unwholesome meat or fish, or any veal less than three weeks old when killed, in any of the market houses or other places for vending meat in any of the cities or boroughs in the several counties of this commonwealth under a penalty of ten dollars for each offense, to be recovered as other penalties are recoverable before any alderman or justice of the peace; one-half of said penalty to go to the informer and the other half for the benefit of the poor.

203. If any person shall sell or expose for sale the flesh of any diseased animals, or any other unwholesome flesh, knowing the same to be diseased or unwholesome, or sell or expose for sale unwholesome bread, drink or liquor, knowing the same to be unwholesome; or shall adulterate for the purpose of sale, or sell any flour, meal or other article of food, any wine, beer, spirits of any kind, or other liquor intended for drinking, knowing the same to be adulterated; or shall adulterate for sale, or shall sell, knowing the same to be so adulterated, any drugs or medicines, such person so offending shall be guilty of a misdemeanor, and upon conviction be sentenced to pay a fine not exceeding one hundred dollars or undergo an imprisonment not exceeding six months, or both or either, at the discretion of the court.\*

204. If any person shall manufacture for sale, or sell or offer to sell any candy or confectionery, adulterated by the mixture of terra alba, barytes, talc, or other mineral substance, or by poisonous colors, or flavors, or other ingredients, deleterious or detrimental to health, knowing the same to be so adulterated, such person so offending shall be guilty of a misdemeanor, and upon conviction be sentenced to pay a fine not exceeding one hundred dollars nor less than fifty dollars, and the candy or confectionery, so adulterated, shall be forfeited and destroyed by the order of the court.

205. If any candy or confectionery, adulterated in violation of the first section of this act, shall be found in the possession of any manufacturer, merchant, or dealer, it shall be deemed *prima facie* evidence that the same is

7 May, 1855, § 1.  
P. L. 463.  
P. D. 1146.

Penalty for exposing for sale unwholesome meat or fish.

31 March, 1859, § 69.  
P. L. 401.  
P. D. 422.

Selling unwholesome food, drink or adulterated medicines.

23 May, 1887, § 1.  
P. L. 157.

Adulteration of candy or confectionery declared a misdemeanor.

Penalty.

Candy, etc., so adulterated to be destroyed.

Ibid, § 2.

Possession to be *prima facie* evidence of offer to sell

\*This section is the amendment and extension of the act of 18 March, 1775, 1 Sm. 425; of the fifth section of the act of 8 May, 1854 P. L. 664; and of the eleventh section of the act of 20 April, 1858, F. L. 367, which provide against the sale of unwholesome bread and liquors.

offered for sale and that the person having it in possession knew that the same was so adulterated.

23 May, 1887, § 3  
Action for value of  
not maintainable.

Defendant may  
prove adulteration.

And when proved,  
a legal defense to  
whole of plaintiff's  
claim.

10 April, 1873, § 1.  
P. L., 69.  
P. D., 427.

Oysters not to be  
sold in certain  
months.

**206.** No action shall be maintained, or recovery had in any case, for the value of any candy or confectionery which may have been adulterated as specified in the first section of this act, and it shall be competent for the defendant in every such case to prove that the candy or confectionery was so adulterated, and proof thereof being so made shall amount to a good and legal defense to the whole of the plaintiff's claim therefor.

**207.** It shall be unlawful for any person or persons, during the months of June, July and August, in each year, to bring into this commonwealth, for sale, or to vend or sell, or to expose for sale, any oysters; and any person or persons so offending shall be guilty of a misdemeanor, and upon conviction, shall be sentenced to pay a fine not exceeding one hundred dollars, or undergo an imprisonment not exceeding six months, or both, at the discretion of the court.

### Pleuro-pneumonia.

12 April, 1866, § 1  
P. L., 101.  
P. D., 244.

Pleuro-pneu-  
monia. Diseased  
cattle not to be dis-  
posed of.

**208.** It shall not be lawful for any person who may own any cattle or sheep, affected by the disease known as the pleuro-pneumonia, or other contagious or infectious disease, to sell or otherwise dispose of any cattle, either alive or slaughtered, from the premises where such disease is known to exist, nor for a period of two months after such disease shall have disappeared from said premises.

Ibid., § 2.  
Taking up of dis-  
eased cattle.

**209.** No cattle or sheep shall be allowed to run at large in any township or borough where any contagious disease prevails; and the constables of such townships are hereby authorized and required to take up and confine any cattle so found running at large, until called for, and until all costs are paid; and in townships where there are no constables, it shall be the duty of the township clerk to perform this service; and the said officers shall be entitled to receive one dollar for each head of cattle so taken up, and any officer who shall refuse to perform the duties of this act shall be liable to a fine of ten dollars.

Ibid., § 3.

**210.** Any person offending against the provisions of the first section of this act shall be guilty of a misdemeanor, and upon conviction be sentenced to pay a fine not exceeding five hundred dollars, or undergo an imprisonment not exceeding six months.

211. Whenever it shall be brought to the notice of the Governor of this state, that the disease known as contagious or infectious pleuro-pneumonia exists among the cattle in any of the counties in this state, it shall be his duty to take measures to promptly suppress the disease and prevent it from spreading.

1 May, 1879, § 1.  
P. L. 38.  
P. D. 244.

Prevention of  
spread of pleuro-  
pneumonia.

212. For such purpose, the Governor shall have power, and he is hereby authorized, to issue his proclamation, stating that the said infectious or contagious disease exists in any county or counties of the state, and warning all persons to seclude all animals in their possession that are affected with such disease, or have been exposed to the infection or contagion thereof, and ordering all persons to take such precautions against the spreading of such disease as the nature thereof may, in his judgment, render necessary or expedient; to order that any premises, farm or farms, where such disease exists, or has existed, be put in quarantine, so that no domestic animal be removed from said places so quarantined; and to prescribe such regulations as he may judge necessary or expedient to prevent infection or contagion being communicated in any way from the places so quarantined; to call upon all sheriffs and deputy sheriffs to carry out and enforce the provisions of such proclamations, orders and regulations; and it shall be the duty of all the sheriffs and deputy-sheriffs to obey and observe all orders and instructions which they may receive from the Governor in the premises; to employ such and so many medical and veterinary practitioners, and such other persons as he may from time to time deem necessary, to assist him in performing his duty as set forth in the first section of this act, and to fix their compensation; to order all or any animals coming into the state to be detained at any place or places for the purpose of inspection and examination; to prescribe regulations for the destruction of animals affected with the said infectious or contagious disease, and for the proper disposition of their hides and carcasses; and of all objects which might convey infection or contagion (provided that no animal shall be destroyed, unless first examined by a medical or veterinary practitioner in the employ of the Governor as aforesaid); to prescribe regulations for the disinfection of all premises, buildings and railway cars, and of objects from or by which infection or contagion may take place or be conveyed; to alter and modify, from time to time, as he may

Ibid, § 2.

Powers of the Gov-  
ernor.

Diseased animals  
to be secluded.

Certain farms to  
be quarantined.

Destruction of dis-  
eased animals.

Disinfection of  
buildings, etc.



1 May, 1879.

deem expedient, the terms of all such proclamations, orders and regulations, and to cancel or withdraw the same at any time.

*Ibid.*, § 3.  
Payment of ex-  
penses.

213. All the necessary expenses incurred under direction or by authority of the Governor in carrying out the provisions of this act, shall be paid by the Treasurer, upon the warrant of the Auditor General, on being certified as correct by the Governor: *Provided*, That animals coming from a neighboring state that have passed a veterinary examination in said state and have been quarantined and discharged, shall not be subject to the provisions of this act.

Animals previ-  
ously examined  
not subject to the  
act.

### Milk, Butter, Cheese, Oleomargarine.

20 April, 1869, § 1  
P. L. 81.  
P. D. 1173.

Inspection of milk.

214. The councils of cities and boroughs in this commonwealth be and they are hereby authorized and empowered to provide for the inspection of milk, under such rules and regulations as will protect the people from adulteration and dilution of the same.

14 April, 1870, § 1  
P. L. 1176.  
P. D. 1173 n.

Sale of impure milk  
to cheese manufac-  
tories.

215. Whoever shall knowingly sell, supply or bring to be manufactured, to any cheese manufactory in this state, any milk diluted with water, or in any way adulterated, or milk from which any cream has been taken, or milk commonly known as skim-milk, or whoever shall keep back any part of the milk known as strippings, or whoever shall knowingly bring or supply milk to any cheese manufactory that is tainted, or partly sour, from want of proper care in keeping pails, strainers or any vessels in which said milk is kept, clean and sweet, after being notified of such taint or carelessness, or any cheese manufacturers who shall knowingly use, or direct any of his employes to use for his or their individual benefit, any cream from the milk brought to said cheese manufacturer, without the consent of all the owners thereof, shall, for each and every offense, forfeit and pay a sum not less than twenty-five dollars nor more than one hundred dollars, with costs of suit, to be sued for in any court of competent jurisdiction, for the benefit of the person or persons, firm or association or corporation, or their assignees, upon whom such fraud shall be committed: *Provided*, That the provisions of this act shall extend only to Erie, Crawford and McKean counties.

Varieties of impure  
milk.

Penalty.

25 May, 1878, § 1.  
P. L. 144.  
P. D. 1173.

Penalty for sale of  
adulterated milk.

216. Any person or persons who shall knowingly sell or exchange any impure, adulterated or unwholesome milk, shall be deemed guilty of a misdemeanor, and on

conviction shall be punished by a fine of not less than twenty dollars for each and every offense; and if the fine be not paid, shall be imprisoned for not less than fifteen days, or until said fine shall be paid.

217. Any person who shall adulterate milk, with the view of offering the same for sale or exchange, shall be deemed guilty of a misdemeanor, and on conviction shall be punished by a fine of not less than ten dollars for each and every offense; and if the fine be not paid, shall be imprisoned for not less than eight days, or until said fine is paid.

218. Any person or persons who shall, in any cities, boroughs and villages, having a population of one thousand inhabitants and upwards, engage in or carry on the sale, exchange or traffic in milk, shall have the carriage or vehicle from which the same is vended conspicuously marked with his, her or their names, also indicating the locality from whence said milk is obtained or where produced; and for every neglect of such marking, the person or persons so neglecting shall be subject to the penalties provided for in section second of this act.

219. For marking wagons or vehicles so as to convey the idea that said milk is procured from, or produced in, a different locality than it really is, the person or persons so offending shall be subject to a fine of fifty dollars, or imprisonment not less than thirty days, or both, at the discretion of the court.

220. The addition of water or of ice to the milk, is hereby declared an adulteration; any milk obtained from animals fed on distillery waste or any substance in a state of putrefaction, is hereby declared to be impure and unwholesome.

221. If any person or persons shall, with intent to defraud, sell, supply or bring to be manufactured, at any butter or cheese manufactory in this state, any milk diluted with water, or in any way adulterated, uncleanly or impure, or milk from which cream has been taken, or milk commonly known as skimmed milk, or if any person or persons so furnishing milk as aforesaid, who shall keep back any part of the milk known as "strippings," or who shall knowingly bring or supply milk to any butter or cheese manufactory that is tainted or partially sour, or shall knowingly bring or supply to any butter or cheese manufactory milk drawn from cows within fifteen days before parturition, or within five days after

25 May. 1878.

Ibid. § 2.

Penalty for the adulteration of milk.

Ibid. § 3.

Milk wagons to be marked.

Ibid. § 4.

Penalty for deceptive marking.

Ibid. § 5.

What to be deemed an adulteration.

June, 1881. § 1.  
P. L., 116.  
P. D., 231.

Penalty for furnishing impure milk to butter or cheese factories.

10 June, 1881.

parturition, shall for each offense forfeit and pay a sum not less than ten dollars nor more than one hundred dollars, with costs of suit, to be sued for in any court of competent jurisdiction for the benefit of the person or persons, firm or association or corporation upon whom such fraud or neglect shall be committed.

7 July, 1885, § 1.  
P. L. 260.  
P. D. 2239.

Sale, etc., of adulterated milk prohibited in cities of the second and third classes.

Penalty.

Ibid, § 2.

Sale, etc., of milk from which cream has been taken, as pure milk, prohibited.

Penalty.

Ibid, § 3.

Milk from which the cream has been taken, to be sold from vessels marked "skimmed milk."

Penalty for violation of this section.

Ibid, § 4.

What kind of milk shall be deemed to be adulterated.

222. In cities of the second and third classes whoever by himself or by his servant or agent, or as the servant or agent of any other person, sells, exchanges or delivers, or has in his custody or possession with intent to sell or exchange, or exposes or offers for sale or exchange, adulterated milk, or milk to which water or any foreign substance has been added, or milk produced from cows fed upon any substance in a state of putrefaction, or from sick or diseased cows, shall for such offense, be punished by a fine of not less than twenty, nor more than one hundred dollars.

223. Whoever, by himself or by his servant or agent or as the servant or agent of any other person, sells, exchanges or delivers, or has in his custody or possession, with intent to sell or exchange, or exposes or offers for sale as pure milk, any milk from which the cream or any part thereof has been removed shall, for such offense, be punished by the penalty provided in the preceding section.

224. No dealer in milk and no servant or agent of such a dealer, shall sell, exchange or deliver, or have in his custody or possession, with intent to sell, exchange or deliver, milk from which the cream or any part thereof has been removed, unless in a conspicuous place above the center upon the outside of every vessel, can or package, from or in which such milk is sold the words "skimmed milk" are distinctly painted in letters not less than one inch in length.

Whoever violates the provisions of this section shall, for such offense, be punished by the penalty provided in section one of this act.

225. If the milk mentioned in sections one and two of this act is shown, upon analysis, to contain more than eighty-seven and fifty-one-hundredth per centum of watery fluid, and to contain less than twelve and fifty-one-hundredth per centum of milk solids, and less fat than three per centum, and if the specific gravity at sixty degrees Fahrenheit is not between one and twenty-nine-

one-thousandths to one and thirty-three-one-thousandths, it shall be deemed to be adulterated.

7 July, 1885

226. If the skimmed milk mentioned in section three of this act is shown, upon analysis, to contain less than six per centum of cream by volume, and less than two and five-tenths per centum of fat by weight, and if the specific gravity at sixty degrees Fahrenheit, is not between one and thirty-two-thousandths, to one and thirty-seven-thousandths, it shall be deemed to be adulterated.

Ibid, § 5.

When "skimmed milk" shall be deemed to be adulterated.

227. Whenever the inspector of milk has reason to believe that any milk found by him is adulterated, he shall take specimens thereof and test the same with such instrument or instruments as are used for such purpose and if the result of such test indicates that the milk has been adulterated or deprived of its cream, or any part thereof, the same shall be *prima facie* evidence of such adulteration in prosecution under this act. If the said inspector shall deem it necessary he shall cause such milk to be analyzed, the result of which analysis he shall record and keep as evidence, and a certificate of such result sworn to by the analyzer shall be admissible in evidence in prosecutions under this act. The expenses of such analysis, not exceeding fifteen dollars in any one case, may be included in the costs of such prosecutions.

Inspector may take specimens for examination.

When same may be *prima facie* evidence.

Inspector may cause milk to be analyzed.

Sworn certificate may be evidence.

Expense of analysis.

228. It shall be the duty of the inspector of milk to commence proceedings in the name of the board of health for any violations of the provisions of this act, from his own knowledge, or on information of any person giving satisfactory evidence to him of such violations before any mayor, deputy mayor, or alderman of said cities.

Inspector to commence proceedings for violation of act.

The recovery of fines or penalties imposed and inflicted on any person by the provisions of this act, shall be for the use of said board of health, and upon non-payment of the fines or penalties imposed and inflicted as aforesaid, such person shall be committed to the county jail for a period not exceeding thirty days.

To whom fines, etc., are to be paid.

Imprisonment.

229. That in addition to the fines mentioned in the foregoing sections of this act, any person or persons violating the same, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be liable to a fine of not less fifty, nor more than one hundred dollars, or by imprisonment in the county jail for not less than ten, nor more than thirty days, or both or either at the discretion of the court.

Violation of act declared a misdemeanor.

Penalty.



21 May, 1885, § 1.  
P. L. 22.  
P. D. 2358.

Manufacture of  
imitation butter or  
cheese prohibited.

*Ibid.*, § 3.

No action lies for  
price of such article

*Ibid.*, § 2.

Penalty.

*Ibid.*, § 4.

Penalty for first  
offense.

Penalty for subse-  
quent offense.

*Ibid.*, § 5.

Constables to make  
quarterly reports  
to quarter sessions  
of violations.

**230.** No person, firm, or corporate body shall manufacture out of any oleaginous substance or any compound of the same, other than that produced from unadulterated milk or of cream from the same, any article designed to take the place of butter or cheese produced from pure unadulterated milk or cream from the same, or of any imitation or adulterated butter or cheese, nor shall sell or offer for sale, or have in his, her or their possession with intent to sell the same as an article of food.

**231.** Every sale of such article or substance, which is prohibited by the first section of this act, made after this act shall take effect, is hereby declared to be unlawful and void, and no action shall be maintained in any of the courts of this state to recover upon any contract for the sale of any such article or substance.

**232.** Every person, company, firm or corporate body who shall manufacture, sell or offer or expose for sale, or have in his, her or their possession with intent to sell, any substance, the manufacture and sale of which is prohibited by the first section of this act, shall, for every such offense, forfeit and pay the sum of one hundred dollars, which shall be recoverable with costs by any person suing in the name of the commonwealth as debts of like amount are by law recoverable; one-half of which sum, when so recovered, shall be paid to the proper county treasurer for the use of the county in which suit is brought, and the other half to the person or persons at whose instance such a suit shall or may be commenced and prosecuted to recovery.

**233.** Every person, who violates the provisions of the first section of this act, shall be deemed guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than one hundred dollars, nor more than three hundred, or by imprisonment in the county jail for not less than ten nor more than thirty days, or both, such fine and imprisonment for the first offense, and imprisonment for one year for every subsequent offense.

**234.** It shall be the duty of constables of the several cities, boroughs, wards and townships of this commonwealth, to make quarterly reports under oath to the courts of quarter sessions of all violations of any of the provisions of this act which may come or be brought to their notice, and it shall be the duty of the judges of the said

courts to see that the said returns are made regularly and faithfully.

235. This act shall take effect on the first day of July, A. D. 1885.

All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

This act was declared constitutional by the supreme court, January 3, 1887. The act regulating the manufacture and sale of oleomargarine, hereby repealed, was that of 24 May, 1883, P. L. 43, P. D. 230.

The act of May 21, 1885, P. L. 22, prohibiting the manufacture and sale of oleomargarine, or the keeping the same with intent to sell, falls within the police power of the state, which may be prescribed to be the power vested in the legislature by the constitution to make, ordain and establish all manner of wholesome and reasonable laws, statutes and ordinances, either with penalties or without, not repugnant to the constitution, as they shall judge to be for the good and welfare of the commonwealth, and the people of the same.

The test of the reasonableness of a police regulation prohibiting the making and vending of a particular article of food, is not alone whether it is in part unwholesome and injurious. If an article of food is of such a character that few persons will eat it knowing its real character, if at the same time it is of such a nature that it can be imposed upon the public as an article of food which is in common use, and against which there is no prejudice; and if in addition to this, there is probable ground for believing that the only way to prevent the public from being defrauded into purchasing the counterfeit article from the genuine is to prohibit altogether the manufacture and sale of the former, then such a prohibition may stand as a reasonable police regulation, although the article prohibited is in fact innocuous, and although its production might be found beneficial to the public, if in buying it they could distinguish it from the production of which it is the imitation. The fact that scientific experts may pronounce a manufactured article intended for human food to be wholesome and in a pure state good for food, does not render it incompetent for the legislature to prohibit the manufacture and sale of the article, if in the judgment of the legislature, and not of the courts, it be necessary to the protection of the lives, health and property of the citizens, and to the preservation of good order and the public morals. The act of 21st May, 1885, is not in conflict with amendment XIV, of the Constitution of the United States. *Powell v. Commonwealth*, 114 Pa. St. 265. See dissenting opinion of Justice Gordon, in same case.

236. Every person who shall wilfully and maliciously kill, maim or disfigure any horses, cattle or other domestic animals of another person, or shall wilfully and maliciously administer poison to any such beasts, or expose any poisonous substance with the intent that the same should be taken or swallowed by them, shall be guilty of a misdemeanor, and being thereof convicted shall be sentenced to pay a fine not exceeding five hundred dollars

21 May, 1885.

*Ibid.*, § 6.

*Ibid.*, § 7.

31 March, 1830, § 154.  
P. D. 450.

Maliciously killing, maiming or poisoning cattle.

and to undergo an imprisonment by separate or solitary confinement at labor not exceeding three years.

23 May, 1878, § 1  
P. L. 117.  
P. D. 1338.  
Exposure of poi-  
sons for birds.

No person shall put or expose in any public place or highway, nor on his own lands outside of his buildings, nor on the lands of any other person, any poison, or admixture thereof, with the intent that the same shall be taken or swallowed by any bird, fowl or wild animal.\*

Penalty.

Any person violating this act shall, on conviction before any alderman or justice of the peace, be subjected to a fine of twenty dollars to the use of the commonwealth.

### Adulteration of Liquors.

14 April, 1863, § 1.  
P. L. 389.  
P. D. 422.

Drugs not to be  
used in manufac-  
ture of liquors.

**237.** It shall be unlawful for any person or persons to make use of any active poison or other deleterious drugs in any quantity or quantities in the manufacture or preparation by process of rectifying or otherwise of any intoxicating malt or alcoholic liquors, or for any person or persons to knowingly sell such poisoned or drugged liquors in any quantity or quantities; and any person or persons so offending shall be deemed guilty of a misdemeanor.

Ibid, § 2.

Manufacturers to  
brand their names,  
etc., on barrels.

**238.** It shall be the duty of any person or persons engaged in the manufacture and sale of intoxicating malt or alcoholic liquors, or in rectifying or preparing the same in any way, to brand on each barrel, cask or other vessel containing the same, the name or names of the person or persons manufacturing, rectifying or preparing the same, and also these words, "containing no deleterious drugs or added poison;" and shall also certify the same fact or facts to the purchaser over his, her or their own proper signature.

Ibid, § 3.

Possession of drug-  
ged liquor evi-  
dence of violation.

**239.** If any barrel, cask or other vessel containing any such drugged or poisoned liquor shall be found in the possession of any person or persons designated in sections one and two it shall be deemed *prima facie* evidence of a violation of the provisions of this act.

Ibid, § 4.

Court may direct  
analysis.

**240.** Any suspected article or specimen of intoxicating malt or alcoholic liquor shall be subject to analysis by some competent person to perform the same under the direction of the court before which the case is tried; and such analysis duly certified under oath shall be deemed legal evidence in any court in this state: *Provided*, That upon any preliminary examination before any justice of the peace, mayor or other magistrate or competent au-

\*This does not appear to embrace dogs and cats, which are neither "birds, fowls nor wild animals." Being a highly penal law, it must be taken strictly.—P. D. 1338, n.

thority; for the purpose of binding over, such officer may order the inspection aforesaid to be made and make such order as may be necessary to preserve the evidence of the offense until the trial of the offender.

**241.** Any person offending against any of the provisions of this act shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be sentenced to pay a fine not exceeding five hundred dollars, and to undergo an imprisonment not exceeding twelve months, or both, or either, in the discretion of the court.

**242.** In all actions for the sale of any spirituous, vinous or malt liquors, or any admixtures thereof, it shall be competent for the defendant, in every such case, to prove that said liquors or admixtures thereof were impure, vitiated, or adulterated; and proof thereof being made, shall amount to a good and legal defense to the whole of the plaintiff's demand.\*

**243.** [Special provision for Allegheny county practically identical with the above.]

**244.** Any and all persons engaged in the business of brewing or manufacture of ale, beer or other malt liquors, or in the fermentation, distillation or manufacture of any vinous or spirituous liquors, be and they are hereby prohibited making use, in or about such business, or in any such process of brewing, fermentation, distillation, or manufacture of any poisonous or deleterious drugs or chemicals, or any impure or injurious materials, or such as are prejudicial to the public health, or the health of any person drinking or making use of any such malt, vinous or spirituous liquors.

**245.** [The violation of the first section of this act is declared to be a misdemeanor, punishable by a fine of one thousand dollars and by an imprisonment of not more than one year.]

\* The act of March 29, 1860, P. L. 346, was not intended to prevent every admixture of liquors, and the penalty of the act is aimed at such impurity, vitiation, or adulteration of liquors or admixtures thereof as impair either their quality or value. The act forbids the introduction of all poisonous or noxious ingredients. *Clohessey v. Roedelheim*. 1 Pennyp. 266.

14 April, 1863.

Ibid. § 5.

Penalty, fine or imprisonment.

29 March, 1860, § 1.  
P. L. 346.  
P. D. 1085.

Impurity of liquors sold, good defense to action for price.

3 April, 1872, § 13.  
P. L. 843.  
P. D. 1090.

2 June, 1881, § 1  
P. L. 43.  
P. D. 423.

Use of injurious drugs in manufacture of liquors prohibited.

Ibid, § 2.

Penalty.



## XI. APOTHECARIES.

### Medicines, Poisons.

24 May, 1887, § 1.  
P. L. 189.  
P. D. 2132.

Druggists, etc., not to engage in business without certificate of competency from State Pharmaceutical Examining Board.

To be registered.

Ibid, § 2.

State Pharmaceutical Examining Board established.

Governor to appoint the five members.

Qualifications.

Terms of members first appointed.

Regular term.

Compensation.

State to be at no expense whatever.

Organization of the board.  
Secretary to be elected.  
Compensation of Secretary.

Members of the board to be sworn.

**246.** No person whosoever shall open or carry on as manager, in the State of Pennsylvania,† any retail drug or chemical store, nor engage in the business of compounding or dispensing medicines, or prescriptions of physicians, or of selling at retail any drugs, chemicals, poisons or medicines, without having obtained a certificate of competency and qualification to do so from the State Pharmaceutical Examining Board, and having been duly registered as herein provided.

**247.** There shall be established in the State of Pennsylvania a board to be styled the "State Pharmaceutical Examining Board," to consist of five persons, three of whom shall constitute a quorum, who shall be appointed by the Governor from among the most skilful retail apothecaries, actually engaged in said business in the State of Pennsylvania, and who must have had ten years' practical experience in the same, one to serve five years, one, four years, one, three years, one, two years and one, one year, in the first instance, and thereafter annually the Governor shall appoint one person to serve as a member of said board for the term of five years. The said persons so appointed shall be and constitute the said the State Pharmaceutical Examining Board, and shall hold the office for the term for which they were appointed, or until their successors are duly appointed and qualified, and shall receive as a compensation for their services five dollars for each day actually engaged in this service and all legitimate and necessary expenses incurred in attending the meetings of said board under the provisions of this act, and no part of the salary of said board or expenses thereof shall be paid out of the state treasury.

The said board shall organize by electing one of its members secretary, who, in addition to his compensation as member of said board, shall receive a further sum not to exceed one hundred dollars annually for his services as secretary.

They the said board and each of them shall, within ten days after their appointment or being apprised of the

† The act 4 April, 1872, § 1, p. L. 905, P. D. 96, applied only to Philadelphia, and is superseded by this act.

same, take and subscribe an oath or affirmation, before a properly qualified officer of the county in which they reside, that they will faithfully and impartially perform the duties of their office.

Any vacancies occurring in said board shall be filled by the Governor of the State of Pennsylvania from among such only as are eligible for original appointment.

24 May, 1887.

Vacancies to be filled by the Governor.

**248.** The said Pharmaceutical Examining Board shall keep a book of registration open at some convenient place, of which due notice shall be given by advertisement in at least four newspapers of the state and so divided as to reach as nearly as practicable all parts thereof, in which book shall be registered the name and address of each and every person duly qualified under this act to conduct and carry on the retail drug and apothecary business, or to hold the position of qualified assistant therein. And it shall be the duty of all persons now conducting or who shall hereafter conduct the business of retail apothecaries, or those acting in the capacity of qualified assistants therein, in said state, to apply to said board and be registered as such within ninety days after such notice, and thereafter every three years; application for registration only may be sent by mail to the secretary of the examining board, after being properly attested before a notary public or any other person authorized to administer an oath or affirmation in the county in which the applicant resides.

*Ibid.*, § 3.

Book of registration to be kept open.

Notice of place to be advertised in four newspapers.

Contents of registration book.

Duty of the person engaged in the business to register

Application for registration may be sent by mail.

The form of application shall be subject to such regulations as the board may see proper to adopt, but in no case shall the applicant be put to any unnecessary expenses in order to secure registration.

Board to adopt form for registration.

**249.** The said board shall be entitled to demand and receive from each applicant for examination and registration and for the certificate hereinafter provided, a fee not to exceed two dollars, and for registration only, a fee not to exceed one dollar in the first instance, and for renewing the same every three years, a fee not to exceed one dollar; and the amount derived from this source shall be held by said board and be applied to the expenses and salaries herein provided, and such as may rise under the provisions of this act; and they, the said board, shall report annually to the Governor of the State of Pennsylvania all moneys received and disbursed under the provisions of this act, together with the number of pharmacists registered under this act.

*ibid.*, § 4.

Fees to be charged and received by the board.

Application of the fees so received.

Board to make an annual report to the Governor.

Contents of report.

24 May, 1887. § 5.

Meetings of the board.

Examination.

Certificates of competency to be given to qualified persons.

Contents of certificate.

Certificates to be evidence of registration.

Druggists to have four years' experience to secure certificate.

Assistants two years' experience.

Ibid, § 6.

All druggists must have certificates.

This act not to apply to practitioners of medicine.

Nor interfere with "patent medicines."

Nor prevent sale of commonly used medicines.

Violation of this section a misdemeanor.

Penalty

**250.** It shall be the duty of said board to meet once every three months in the city of Harrisburg, or at such other place as they may deem expedient, and examine all persons who shall desire to carry on the business of a retail apothecary, or that of retailing drugs, chemicals or poisons, or of compounding physicians' prescriptions, touching their competency and qualifications; and they, the said board, or a majority of them, shall grant to such persons as may be qualified, certificates of competency or qualification, which shall entitle the holders thereof either to conduct or carry on the business, or to act as a qualified assistant therein, as may be expressed upon the said certificate, and such certificate, together with its renewals, shall be good and sufficient evidence of registration under this act.

All persons applying for examination for certificate to entitle them to conduct and carry on the retail drug or apothecary business, must produce satisfactory evidence of having had not less than four years' practical experience in the business; and those applying for examination for certificates as qualified assistants therein, must produce evidence of having not less than two years' experience in said business.

**251.** No person shall hereafter engage as manager in the business of an apothecary, or pharmacist, or of retailing drugs, chemicals and poisons, or of compounding and dispensing the prescriptions of physicians, either directly or indirectly, without having obtained such certificate as aforesaid. But nothing contained in this act shall, in any manner whatever, interfere with the business of any practitioner of medicine, nor prevent him from administering or supplying to his patients such articles as to him may seem fit and proper, nor shall it interfere with the making and dealing in proprietary remedies, popularly called patent medicines, nor prevent store keepers from dealing in and selling the commonly used medicines and poisons, if such medicines and poisons conform, in all respects, to the requirements of section nine: *Provided*, The provisions of section ten of this act be fully complied with.

Any person who shall violate or fail to comply with the provisions of this section shall be guilty of a misdemeanor, and on conviction, before any court, shall be punished by a fine not exceeding one hundred dollars, or be imprisoned in the county jail of the proper county for a term

not exceeding one year, or either, or both, at the discretion of the court.

**252.** The foregoing provisions of this act shall not apply to or effect (affect?) any person who shall be engaged in the retail drug and apothecary business as proprietor of the same, or as qualified assistant therein, at the passage of this act, except only in so far as relates to registration and fees provided in sections three and four of this act. A qualified assistant engaged in the business, at the passage of this act, is one who has had not less than two years' practical experience in the retail drug and apothecary business. All other assistants actually engaged in the business at the passage of this act shall, upon the completion of a like term of two years' experience, be entitled to registration as qualified assistants without examination.

**253.** No person shall be allowed, by the proprietor or manager of any store or place where prescriptions are compounded, to compound or dispense the prescriptions of physicians, except under the immediate supervision of said proprietor or his qualified assistant, unless holding a properly certified certificate of registration or competency from the State Pharmaceutical Examining Board, as herein provided, and any person violating the provisions of this section shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding one hundred dollars.

**254.** No person shall knowingly, wilfully or fraudulently falsify or adulterate, or cause to be falsified or adulterated, any drug or medical substance, or any preparation authorized or recognized by the pharmacopœia of the United States, or used or intended to be used in medicinal practice, nor mix or cause to be mixed with any such drug or medicinal substance any foreign or inert substance whatsoever for the purpose of destroying or weakening its medicinal power and effect, and wilfully, knowingly or fraudulently sell or cause the same to be sold for medicinal purposes.

Any person who shall violate this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding five hundred dollars, and shall forfeit to the commonwealth all articles so adulterated.

**255. Poisons.** A poison in the meaning of this act shall be any drug, chemical or preparation, which, accord-

24 May, 1887

Ibid, § 7.

Act not to apply to persons now engaged in business, except as to registration.

Term "qualified assistant" defined.

When other assistants entitled to registration without examination.

Ibid, § 8.

What persons only permitted to compound or dispense prescriptions.

Violation of this provision declared a misdemeanor.

Penalty

Ibid, § 9.

Wilful falsification or adulteration of drugs prohibited.

Sale of adulterated or weakened drugs prohibited.

Violation of provisions of this section declared a misdemeanor.  
Penalty.

Ibid, § 10

The word "poison" defined.



24 May, 1887.

Bottle, box, etc.,  
containing poison  
to be labelled.

Contents of label.

Seller to satisfy  
himself as to the  
use to be made of  
poisons.

Sales of certain  
poisons to be regis-  
tered in a book.

Facts to be regis-  
tered.

Book to be kept for  
two years and be  
open to inspection.

Certain poisonous  
articles may be  
sold without a re-  
cord thereof being  
kept.

Violations of pro-  
visions of this sec-  
tion declared a mis-  
demeanor.

Penalty.

Ibid. § 11.

Certain graduates  
of medical colleges  
may be registered  
as druggists without  
examination.

Fees prescribed by  
this act to be paid.

ing to standard works on medicine or materia medica, is liable to be destructive to adult human life, in quantities of sixty grains or less.

No person shall sell at retail any poisons, except as herein provided, without affixing to the bottle, box, vessel or package containing the same, a label, printed or plainly written, containing the name of the article, the word "poison," and the name and place of business of the seller, nor shall he deliver poison to any person without satisfying himself that such poison is to be used for legitimate purposes.

It shall be the further duty of any one selling or dispensing poisons, which are known to be destructive to adult human life in quantities of five grains or less, before delivering them, to enter in a book kept for this purpose the name of the seller, the name and residence of the buyer, the name of the article, quantity sold or disposed of, and the purpose for which it is said to be intended, which books of registry shall be preserved for at least two years, and shall at all times be open to the inspection of the coroner or courts of the county in which the same may be kept.

The provisions of this section shall not apply to the dispensing of physicians' prescriptions, specifying poisonous articles, nor the sale to agriculturists of such articles as are commonly used by them as insecticides. Any person failing to comply with the provisions of this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than five nor more than fifty dollars for each and every offense.

**256.** Any graduate of an accredited medical college, who has had not less than three years continuous practice since the date of his diploma, and who is registered as a practitioner of medicine and surgery, under the act, entitled "An act to provide for the registration of all practitioners of medicine and surgery," approved the eighth day of June, Anno Domini one thousand eight hundred and eighty one, may be registered under this act without examination and be granted a certificate, which shall entitle him to conduct and carry on the retail drug or apothecary business as proprietor and manager thereof, subject to fees provided in sections three and four of this act.

**257.** It shall be the duty of the State Pharmaceutical Examining Board to investigate all complaints and charges

of non-compliance or violation of the provisions of this act, and persecute all persons so offending whenever there shall appear to the board reasonable ground for such action.

**258.** No apothecary, druggist or other person, shall sell or dispose of, by retail, any morphia, strychnia, arsenic, prussic acid or corrosive sublimate, except upon the prescription of a physician, or on the personal application of some respectable inhabitant of full age, of the town or place in which such sale shall be made; and in all cases of such sale, the word poison shall be carefully and legibly marked or placed upon the label, package, bottle or other vessel or thing in which such poison is contained;\* and when sold or disposed of, otherwise than under the prescription of a physician, the apothecary, druggist or other person selling or disposing of the same, shall note in a register, kept for that purpose, the name and residence of the person to whom such sale was made, the quantity sold, and the date of such sale; any person offending herein, shall be guilty of a misdemeanor, and, on conviction, be sentenced to pay a fine, not exceeding fifty dollars.†

**259.** Every individual or co-partnership, who shall engage in the business of manufacturing or vending nostrums or patent medicines, of whatever class or character, shall, for the purpose of taxation, be deemed and taken to be dealers in merchandise, and shall be classed and rated for a yearly license in the same manner, except as is hereinafter provided, as other dealers in merchandise are now classed and rated: *Provided*, That nothing herein contained shall be so construed as to exempt any manufacturer of nostrums or patent medicines from the payment of the proper license fee, or any part thereof, on the grounds that he is selling goods of his own manufacture, from the place where the same were manufactured.

**260.** Any person convicted of violating the provisions of the preceding sections,‡ shall be fined in a sum not less than fifty nor more than five hundred dollars for each offense; one-half to be paid to the county treasurer

24 May, 1887, § 21.

State Pharmaceutical Board to investigate all alleged violations of act.

31 March, 1860, § 70.  
P. L. 401.  
P. D. 422.

Sale of poisons regulated.

Every sale to be noted in a register.

5 June, 1853, § 1.  
P. L. 87.  
P. D. 1307

Dealers in patent medicines must take out a yearly license.

10 April, 1849, § 27.  
P. L. 575.  
P. D. 1307.

Penalty

\* This does not apply to a case in which poison is sold as an ingredient of a medicine on the prescription of a physician. *Cwltb. v. Sheriff*, 41 Leg. Int. 366.

† This act embodied in sec. 10, act 24, May, 1887, P. L. 189, above, 255.

‡ Relating to licenses for the manufacture and sale of patent medicines.

10 April, 1849.

Ibid, § 28.  
P. D. -1307.  
Acts relating to  
venders of mer-  
chandise extended  
to patent medi-  
cines.

for the use of the commonwealth, and the other half to the person or persons who shall prosecute such offender.

**261.** All the provisions and duties enjoined upon any one by the act entitled "An act graduating duties upon wholesale dealers and retailers of merchandise, and prescribing the mode of issuing licenses and collecting said duties," passed the 7th day of April, 1830, and the several supplements thereto, are hereby extended and declared to apply to this act, except so far as they are inconsistent herewith.

Dealers in patent medicines were held liable under this act. *Laffer's Appeal*, 34 Leg. Int. 283.

An apothecary who sells patent medicines is liable for the additional license tax imposed by this act. *Commonwealth v. Fuller*, 4 Luz. Leg. Obs. 225.

13 May, 1887, § 16.  
P. L. 108.  
P. D. 2232.

Apothecaries can  
sell intoxicating  
liquors only on  
written prescrip-  
tion.

Penalty

No liquors to be  
furnished more  
than once on same  
prescription.

**262.** Druggists and apothecaries shall not be required to obtain licenses under the provisions of this act, but they shall not sell intoxicating liquors except upon the written prescription of a regularly registered physician; alcohol, however, or any preparations containing the same, may be sold for scientific, mechanical or medicinal purposes. Any one violating the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be subject to the same penalties as are provided in the fifteenth section of this act: *Provided*, That no spirituous, vinous, malt or brewed liquors shall be sold or furnished to any person more than once on any one prescription of a physician: *And provided further*, That any physician, who shall wilfully prescribe any intoxicating liquors as a beverage to persons of known intemperate habits shall be guilty of a misdemeanor, and upon conviction thereof, shall be subject to the same penalties and fines as are prescribed in section seventeen. [Said section imposes a fine of not less than fifty nor more than five hundred dollars, and an imprisonment of not less than twenty nor more than ninety days.]

Druggists are only retailers *sub modo*; a return of them as retailers does not imply that they retail as a beverage.—*Cwlth. v. Porter*, 10 Phila. 217. A druggist could fill a "standing prescription" for intoxicating liquor *in good faith*, for medical purposes, without violating act 12 April, 1875, § 4, P. L. 40. But if he was aware the liquor was to be used as a beverage, the prescription would not shield him. In an emergency he may sell without a prescription.—*Cwlth. v. Patterson*, 16 W. N. C. 193. Where a druggist was convicted of "selling liquor without license," it was held he could not be punished, as the verdict failed to state that the liquor was to be used as a beverage.—*Rhoads v. Cwlth.*, 43 Leg. Int. 437.

## XII. MEDICAL PRACTICE.

### Anatomical Subjects.

**263.** The standard qualifications of a practitioner of medicine, surgery or obstetrics, shall be and consist of the following, namely: A good moral character, a thorough elementary education, a comprehensive knowledge of human anatomy, human physiology, pathology, chemistry, *materia medica*, obstetrics, and practice of medicine and surgery and public hygiene.

24 March, 1877. § 1

P. L. 4.  
P. D. 1332.

Qualifications of  
medical practitioners.

**264.** It shall be unlawful, after the passage of this act, for any person to announce himself or herself as a practitioner of medicine, surgery or obstetrics, or to practice the same, who has not received, in a regular manner, a diploma from a chartered medical school, duly authorized to confer upon its *alumni* the degree of doctor of medicine: *Provided*, That this act shall not apply to any resident practitioner of medicine, surgery or obstetrics who has been in such continuous practice in this commonwealth, for a period of not less than five years previous to the passage of this act.\*

*Ibid.*, § 2.

No person to practice without diploma.

Exception.

**265.** Before any person shall engage in the practice of medicine, surgery or obstetrics, in this commonwealth, or who has not a diploma as provided for in section second of this act, such person shall make affidavit, under oath or affirmation, before the prothonotary of the county where such person intends practicing, setting forth the time of continuous practice, and the place or places where such practice was pursued in this commonwealth; thereupon, the prothonotary shall enter the same of record in a book specially provided therefor, to be kept in his office, and open to the inspection of the public; and for such service he shall receive the sum of two dollars, to be paid by the affiant, one-half for the use of the prothonotary, the other for the use of the county.

24 March, 1877. § 3.  
P. D. 1332.

Duties of persons practicing without diploma.

Must register with the prothonotary.

**266.** Any person who shall attempt to practice medicine or surgery for a valuable consideration, by opening a transient office, within this commonwealth, or who shall, by hand bill or other form of written or printed advertisement, assign such transient office, or other place,

*Ibid.*, § 4.

Regulation of transient practice.

\*This section was held to be unconstitutional, as a discrimination against non-resident practitioners, in *Commonwealth v. Irving*, 1 Susq. Leg. Chron. 69. But see below 8 June, 1881, § 8, 275.



24 March, 1877.

to persons seeking medical or surgical advice or prescription, or who shall itinerate from place to place, or from house to house, and shall propose to cure any person, sick or afflicted, by the use of any medicine, means or agency whatsoever, for a valuable consideration, shall, before being allowed to practice in this manner, appear before the clerk of the court of quarter sessions of the county wherein such person desires to practice, and shall furnish satisfactory evidence to such clerk that the provisions of this act have been complied with; and shall, in addition, take out a license for one year, and pay into the county treasury, for the use of such county, the sum of fifty dollars therefor; whereupon, it shall be the duty of such clerk to issue to such applicant a proper certificate of license, on payment of the fee of five dollars for his services.

Ibid, § 5.  
P. D. 1333.  
Penalty for violation.

**267.** Any person who shall violate or fail to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor; and on conviction before any court, shall be sentenced to pay a fine not less than two hundred dollars nor more than four hundred dollars, for each and every offense, for the use of the county wherein such misdemeanor is committed.

8 June, 1881, § 1.  
P. L. 72.  
P. D. 1333.

Medical register to be kept by prothonotary of each county.

**268.** The prothonotary of each county shall purchase a book of suitable size, to be known as the medical register of the county (if such book has not been purchased already), and shall set apart one full page for the registration of each practitioner, and when any practitioner shall depart this life, or remove from the county, he shall make a note of the same at the bottom of the page, and shall perform such other duties as are required by this act.

Ibid, § 2.  
P. D. 1333.  
Diplomas to be registered.

**269.** Every person who shall practice medicine or surgery, or any of the branches of medicine or surgery, for gain, or shall receive or accept for his or her services, as practitioner of medicine or surgery, any fee or reward, directly or indirectly, shall be a graduate of a legally chartered medical college or university, having authority to confer the degree of doctor of medicine (except as provided for in section five of this act), and such person shall present to the prothonotary of the county in which he or she resides or sojourns, his or her medical diploma, as well as a true copy of the same, including any indorsements thereon, and shall make affidavit before him that the diploma and indorsements are genuine; thereupon

the prothonotary shall enter the following in the register, to-wit: the name in full of the practitioner, his or her place of nativity, his or her place of residence, the name of the college or university that has conferred the degree of doctor of medicine, the year when such degree was conferred, and in like manner any other degree or degrees that the practitioner may desire to place on record, to all of which the practitioner shall likewise make affidavit before the prothonotary; and the prothonotary shall place the copy of such diploma, including the indorsements, on file in his office, for inspection by the public.

8 June, 1881.  
Entries on the  
registry.

270. Any person whose medical diploma has been destroyed or lost, shall present to the prothonotary of the county in which he or she resides or sojourns, a duly certified copy of his or her diploma, but if the same is not obtainable, a statement of this fact, together with the names of the professors whose lectures he or she attended, and the branches of study upon which each professor lectured, to all of which the practitioner shall make affidavit before the prothonotary; after which the practitioner shall be allowed to register, in manner and form as indicated in section two of this act; and the prothonotary shall place such certified statement on file in his office, for inspection by the public.

Ibid, § 3  
Statement, where  
diploma is lost.

271. Any person who may desire to commence the practice of medicine or surgery in this state, after the passage of this act, having a medical diploma issued or purporting to have been issued by any college, university, society or association in another state or foreign country, shall lay the same before the faculty of one of the medical colleges or universities of this commonwealth for inspection, and the faculty being satisfied as to the qualifications of the applicant and the genuineness of the diploma, shall direct the dean of the faculty to indorse the same, after which such person shall be allowed to register, as required by section two of this act.

Ibid, § 4.  
Foreign diplomas,  
how registered.

A certificate of the secretary of a medical college of his belief that the diploma of a medical college of another state, is genuine, and legally issued, does not entitle it to registration. *Bower's Case*, 2 Del. Co. Rep. 166.

The requirements of this act should be strictly complied with. The prothonotary's duties are ministerial and he can waive none of the requirements.—*In re Registration*, 16 W. N. C. 538. This is not an *ex post facto* law, and is valid and constitutional. But the oath required therein may be administered by the deputy prothonotary.—*Cwlth. v. Taylor*, 12 Luz. Leg. Reg. 182

8 June, 1881, § 5,  
P. D. 1353.

Registry of practicing physicians  
without diplomas.

**272.** Any person who has been in the continuous practice of medicine or surgery in this commonwealth since 1871, without the degree of doctor of medicine, shall be allowed to continue such practice; but such person shall nevertheless appear before the prothonotary of the county in which he or she resides and shall present to him a written statement of these facts, to which the petitioner shall make affidavit. Thereupon the prothonotary shall enter the following in the register, to-wit: The name in full of the practitioner; his or her place of nativity; his or her place of residence; the time of continuous practice in this commonwealth, and the place or places where such practice was pursued, to all of which the practitioner shall likewise make affidavit; and the prothonotary shall place the certified statement on file in his office for inspection by the public.

*Ibid.*, § 6.

Fee for registration.

**273.** Every practitioner who shall be admitted to registration shall pay to the prothonotary one dollar, which shall be compensation in full for registration, and the prothonotary shall give a receipt for the same.

*Ibid.*, § 7

Penalty for violation.

**274.** Any practitioner who shall present to the faculty of an institution for endorsement, or to any prothonotary, a diploma which has been obtained fraudulently, or is in whole or in part a forgery, or shall make affidavit to any false statement to be filed or registered, or shall practice medicine or surgery without conforming to the requirements of this act, or shall otherwise violate or neglect to comply with any of the provisions of this act shall be deemed guilty of a misdemeanor, and on conviction shall be punished for each and every offense by a fine of one hundred dollars, one-half to be paid to the prosecutor and the other half to be paid to the county, or be imprisoned in the county jail of the proper county for a term not exceeding one year, or both or either, at the discretion of the court.

*Ibid.*, § 8.

Non-resident physicians.

**275.** Nothing in this act shall be so construed as to prevent any physician or surgeon, legally qualified to practice medicine or surgery in the state in which he or she resides, from practicing in this commonwealth; but any person or persons opening an office or appointing any place where he or she may meet patients or receive calls shall be deemed a sojourner, and shall conform to the requirements of this act.

Prescribing intoxicating liquors.

**276.** [As to physicians prescribing intoxicating liquors, see act 13 May, 1887, § 16, P. L. 108, XI, 262.]

**277.** It shall be unlawful for any person to commence or continue the practice of medicine or surgery in the county of Philadelphia who has not graduated with the degree of doctor of medicine, and received a diploma from a chartered medical school or other institution authorized to grant medical diplomas: *Provided*, That the provisions of this section shall not apply to persons who have been ten years in continuous regular practice in said county, though they may not have graduated as aforesaid, nor to persons who are reading medicine under the control and instruction of a physician or surgeon who has the qualification to practice prescribed by this section, when such persons have the assent of such preceptor to practice: *Provided, however*, That such student shall not locate any office or business station outside the usual office of his preceptor.

**278.** Any person who shall attempt to practice medicine or surgery, by opening a transient office in the aforesaid county, or who shall, by handbill or other form of written or printed advertisement, assign such transient office, or other place, to meet persons seeking medical or surgical advice or prescription, shall, before being allowed to practice as aforesaid, appear before the clerk of the courts of the county, and shall furnish satisfactory evidence to such clerk of the courts that the provisions of section one of this act have been complied with, and shall, in addition, take out a license for one year, by payment of a license fee, for the use of the county, of two hundred dollars: *Provided*, That the provisions of this act shall not apply to dentists: *And provided further*, That physicians or surgeons commencing practice in the aforesaid county, with the intention of remaining permanently therein, shall not be subject to the provisions of section one of this act.

**279.** If any persons shall violate any of the provisions of this act, every such person shall be guilty of a misdemeanor, and on conviction thereof shall be fined in a sum not exceeding five hundred dollars, or less than two hundred dollars, or imprisoned not exceeding six months, at the discretion of the court.

### Anatomical Subjects.

**280.** The professors of anatomy, the professors of surgery, the demonstrators of anatomy and the demonstrators of surgery of the medical and dental schools and colleges

31 March, 1870, § 1.  
P. L. 705.  
W. D. 470.

None to practice medicine in Philadelphia without degree of M. D.

Exceptions

Ibid, § 2.

Persons attempting to practice medicine by opening transient office to pay annual license fee of \$200.

This act not to apply to dentists.

Ibid, § 3.

Penalty.



13 June, 1883, § 1.  
P. L. 119.  
P. D. 94.

Board for the dis-  
tribution of bodies  
for anatomical pur-  
poses.

Their powers.

Records.

Ibid, § 2

Municipal officers  
to give notice to  
the board.

And deliver bodies  
without charge.

To be used for  
scientific purposes.

Exceptions.

of this commonwealth, which are now or may hereafter become incorporated, together with one representative from each of the unincorporated schools of anatomy or practical surgery, within this commonwealth, in which there are, from time to time, at time of the appointment of such representatives, shall be not less than five scholars, shall be and hereby are constituted a board for the distribution and delivery of dead human bodies, hereinafter described, to and among such persons as, under the provisions of this act, are entitled thereto. The professor of anatomy in the University of Pennsylvania, at Philadelphia, shall call a meeting of said board for organization, at a time and place to be fixed by him, within thirty days after the passage of this act. The said board shall have full power to establish rules and regulations for its government, and to appoint and remove proper officers, and shall keep full and complete minutes of its transactions; and records shall also be kept, under its direction, of all bodies received and distributed by said board, and of the persons to whom may be distributed, which minutes and records shall be open at all times to the inspection of each member of said board, and of any district attorney of any county within this commonwealth.

**281.** All public officers, agents and servants, and all officers, agents and servants of any and every county, city, township, borough, district and other municipality, and of any and every almshouse, prison, morgue, hospital, or other public institution having charge or control over dead human bodies, required to be buried at the public expense, are hereby required to notify the said board of distribution or such person or persons as may, from time to time, be designated by said board or its duly authorized officer or agent, whenever any such body or bodies come to his or their possession, charge or control, and shall, without fee or reward, deliver such body or bodies, and permit and suffer the said board and its agents, and the physicians and surgeons from time to time designated by them, who may comply with the provisions of this act, to take and remove all such bodies, to be used within this state for the advancement of medical science; but no such notice need be given, nor shall any such body be delivered, if any person claiming to be, and satisfying the authorities in charge of said body that he or she is of kindred or is related by marriage to the deceased, shall claim the said body for burial, but it shall be surrendered for inter-

ment; nor shall notice be given or body delivered, if such deceased person was a traveler who died suddenly, in which case the said body shall be buried.

**282.** The said board, or their duly authorized agent, may take and receive such bodies so delivered as aforesaid, and shall, upon receiving them, distribute and deliver them to and among the schools, colleges, physicians and surgeons aforesaid, in manner following: Those bodies needed for lectures and demonstrations by the said schools and colleges, incorporated and unincorporated, shall first be supplied, the remaining bodies shall then be distributed proportionately and equitably, preference being given to said schools and colleges, the number assigned to each to be based upon the number of students in each dissecting or operative surgery class, which number shall be reported to the board at such time as it may direct. Instead of receiving and delivering said bodies themselves, or through their agents or servants, the board of distribution may, from time to time, either directly or by their authorized officer or agent, designate physicians and surgeons who shall receive them, and the number which each shall receive: *Provided, always, however,* That schools and colleges, incorporated and unincorporated, and physicians or surgeons of the county where the death of the person or such person described takes place, shall be preferred to all others: *And provided also,* That for this purpose, such dead body shall be held subject to their order, in the county where the death occurs, for a period not less than twenty-four hours.

**283.** The said board may employ a carrier or carriers for the conveyance of said bodies, which shall be well enclosed within a suitable encasement, and carefully deposited free from public observation. Said carrier shall obtain receipts by name, or if the person be unknown, by a description of each body delivered by him, and shall deposit said receipt with the secretary of the said board.

**284.** No school, college, physician or surgeon shall be allowed or permitted to receive any such body or bodies, until a bond shall have been given to the commonwealth by such physician or surgeon, or by or in behalf of such school or college, to be approved by the prothonotary of the court of common pleas in and for the county in which such physician or surgeon shall reside, or in which such school or college may be situate, and to be filed in the office of said prothonotary; which bond shall be in the

13 June, 1883

*Ibid.*, § 3  
Distribution regulated.

*Ibid.*, § 4  
Carriage of bodies.

*Ibid.*, § 5  
Schools, etc., to give bond, that bodies shall be used for scientific purposes only.

13 June, 1888.

Traffic in bodies  
prohibited.None to be removed  
from the state.

Penalty

Ibid. § 6.

Expenses.

Ibid. § 7.

Penalty for viola-  
tions of this act.

penal sum of one thousand dollars, conditioned that all such bodies which the said physician or surgeon, or the said school or college, shall receive thereafter shall be used only for the promotion of medical science within this state; and whosoever shall sell or buy such body or bodies, or in any way traffic in the same, or shall transmit or convey, or cause to procure to be transmitted or conveyed, said body or bodies, to any place outside of this state, shall be deemed guilty of a misdemeanor, and shall, on conviction, be liable to a fine not exceeding two hundred dollars, or be imprisoned for a term not exceeding one year.

**285.** Neither the commonwealth nor any county or municipality, nor any officer, agent or servant thereof, shall be at any expense by reason of the delivery or distribution of any such body, but all the expenses thereof, and said board of distribution shall be paid by those receiving the bodies, in such manner as may be specified by said board of distribution, or otherwise agreed upon.

**286.** Any person having duties enjoined upon him by the provisions of this act who shall neglect, refuse or omit to perform the same as hereby required, shall, on conviction thereof, be liable to fine of not less than one hundred nor more than five hundred dollars for each offense.

### XIII. REGISTRATION OF VITAL STATISTICS.

#### Philadelphia. Pittsburg. General Law.

8 March, 1860. § 1.  
P. L. 130.  
P. D. 1479.Health officer to  
register marriages,  
etc.And lay an annual  
abstract before  
councils.

**287.** The city commissioners of the city of Philadelphia shall supply the health officer with separate books, in which he shall register, in the manner hereafter directed, the returns made to him of the marriages which may be contracted, and of the births and deaths which may occur within the said city; he shall also cause an abstract of the same to be made, in the month of February next ensuing, and annually thereafter in said month (presented), to the city councils, through the board of health; which abstract shall contain a statement of the marriages solemnized, and of the number of births and of deaths, with the reported causes thereof, which have occurred in the said city during the year next preceding the first day of January, with such other infor-

mation and suggestions in relation thereto, as he may deem of practical utility for the promotion of public health, and of general interest to the city.

**288.** It shall be the duty of clergymen of all denominations, of clerks or keepers of the records of all churches and religious societies, as also of every magistrate, and of other persons by or before whom any marriage may hereafter be solemnized or contracted, and of every practicing physician, and of every practitioner of midwifery, and of every undertaker and superintendent or sexton of any cemetery or burying ground in the said city of Philadelphia, on or before the first day of July next ensuing (the day in which the law goes into effect), to report his, her or their names and places of residence to the health officer, at the office of the board of health; and it shall be the duty of the health officer to have the same properly registered, in index-form, in suitable books, to be furnished to the city commissioners, at the order of the board of health. In the event of any of the persons above specified removing to any other place of residence, it shall be their duty to notify the health officer of the fact, within thirty days after such removal; except where the persons removing shall cease to act in such official capacity as makes them subject to the provisions of this act.

**289.** Whenever any person shall die, in the city of Philadelphia, it shall be the duty of the physician who attended during his or her last sickness, or of the coroner, when the case comes under his notice, to furnish, within forty-eight hours after the death, to the undertaker or other person superintending the burial, a certificate, setting forth, as far as the same can be ascertained, the full name, sex, color, age and condition (whether married or single), of the person deceased, and the cause and date of death.

**290.** No person having the charge, as sexton or otherwise, of any vault, burying-ground or cemetery, within the said city, shall inter or allow to be interred, or place, or allow to be placed, in any vault, burying-ground or cemetery, the dead body of any person; nor shall any undertaker or other person remove the dead body of any person, who has died in the said city, and has not been buried, to any place beyond the limits of the said city, without first procuring the certificate of the attending physician, or of the coroner. To said certificate, the undertaker or other person having charge of the body shall, as

8 March, 1860.

Ibid. § 2

Names and residences of clergymen, magistrates, physicians and sextons to be registered at office of board of health.

Ibid. § 3.

Physicians or coroner to give certificates to undertakers.

Ibid. § 4.

No corpse to be interred without such certificate.



8 March, 1860.

To which the undertaker shall add certain matters

When health officer may give certificate.

When certificates to be returned to health officer.

Returns to be published weekly.

Ibid, § 5.

Penalty for refusing certificate.

Ibid, § 6.

Duties of persons practicing midwifery

far as can be ascertained, add the occupation of the deceased, the place of birth, the ward, street and number of the house in which the death occurred, the place and date of interment, and, where the deceased is a minor, the full names of the parents. In case any person shall die without the attendance of a physician, or if the physician who did attend at the time of the death, refuses or neglects to furnish a certificate as aforesaid, it shall be the duty of the undertaker, or of any other person acquainted with the facts, to report the same to the health officer, who shall be authorized to give a certificate of death as aforesaid, provided it be not a case requiring the attendance of the coroner. Every sexton or other person having charge of any vault, burying-ground or cemetery within the said city, and every undertaker or other person who shall remove any dead body from or out of the said city, shall return the said certificates to the health officer, before twelve o'clock m., on the Saturday of every week, accompanied by a schedule of the same, which returns shall be published weekly by the health officer in such manner as may be designated by the board of health.

**291.** In case any physician, or the coroner, shall refuse or neglect to furnish such certificate as aforesaid, he shall forfeit and pay the sum of five dollars for each offense, and every undertaker, sexton or other person removing the dead body of any person, or having charge of any vault, burying-ground or cemetery, who refuses or neglects to perform any of the duties required by this act, shall forfeit and pay for every such offense the sum of twenty-five dollars, which sums, shall in every case, be recoverable in the manner and for the uses prescribed in an act, entitled "An act for the establishing a health office to secure the city and port of Philadelphia from the introduction of pestilential and contagious diseases, and for other purposes."

**292.** Every person practicing midwifery, in the city aforesaid, under whose charge or superintendence a birth shall hereafter take place, shall keep a true and exact register of such birth, and shall enter the same on a blank schedule, to be furnished by the health officer. This schedule shall contain a list of the births which have occurred under his or her care during the month, and shall set forth, as far as the same can be ascertained, the full name of each child (if any name shall have been con-

ferred), its sex, color, the full name and occupation of its parent or parents, the day and place of its birth; and the said schedule shall be delivered, duly signed by the practitioner, in the form of a certificate, on the first day of each and every month, to the health officer, or to any other authorized person calling for the same. In case the birth of any child shall have occurred, without the attendance of a physician or of a practitioner of midwifery, or should no other person be in attendance upon the mother immediately thereafter, it shall then become the duty of the parent or parents of such child, to report its birth to the health officer, in the manner and form, and within the period above required.

8 March, 1860.

Schedule of births  
to be returned to  
health officer.

**293.** It shall be the duty of every clergyman and every magistrate, and of the clerk or keeper of the records of all religious and other societies, and of every other person by or before whom any marriage may hereafter be solemnized or contracted, to make a faithful return of the same, at the expiration of every three months, to the health officer, in the form of a certificate, which shall set forth, as far as the same can be ascertained, the full name of the husband, his occupation, the place of his birth, his residence and age, the date of marriage, the full name of the wife previous to the said marriage, and her age, the color of the parties, and the place where, and the name of the clergyman or other person by whom the marriage ceremony was performed.

Ibid, § 7.

Duties of persons  
celebrating mar-  
riages.

**294.** Every clergyman and every, magistrate, and every clerk or keeper of the records of all religious societies, and every practicing physician, and every person practicing midwifery in the city aforesaid, and every undertaker and superintendent or sexton of any cemetery or burying-ground in the city of Philadelphia, who shall neglect or refuse to leave his or her name and place of residence at the health office, as herein provided, and who shall refuse or neglect to perform any other of the duties required as aforesaid, shall forfeit and pay for each offense, the sum of ten dollars, to be recovered in the manner and for the uses prescribed in an act, entitled "An act for establishing a health office and to secure the city and port of Philadelphia from the introduction of pestilential and contagious diseases, and for other purposes."

Ibid, § 8.

Penalty for refus-  
ing to register  
place of residence.

**295.** The books or registers kept by the health officer, or a certificate duly certified by him, as containing a

Ibid, § 9.

Certificates to be  
evidence.

8 March, 1860, § 10.

How registers to be kept.

copy of the record of any marriage, birth or death, shall hereafter be admitted in any court of the state, as *prima facie* evidence of said marriage, birth or death.

**296.** The registry of marriages, births and deaths shall be kept in separate books ; and there shall be general indexes to the record of all marriages, births and deaths, which indexes shall also be kept in separate books.

*Ibid.*, § 11

**297.** The health officer shall receive fifty cents for granting a certificate or certified copy of the record of any marriage, birth or death, and ten cents for making a search for either a marriage, birth or death, which sums shall be paid by the party applying for the certificate or search ; but the said registers shall at all times be accessible to physicians, clergymen and lawyers, without charge.

*Ibid.*, § 12.

**298.** This section is identical with sec. 8, 5 May, 1876, *infra* 320, with this addition : *Deaths*—Full name of deceased ; color, sex, age ; married or single ; occupation ; birthplace ; date and cause of death ; when a minor, the name of the father and mother ; ward, street and number of the house ; date of burial ; date of certificate and registration.

*Ibid.*, § 13

**299.** The health officer shall keep on hand at all times, a supply of blanks for gratuitous distribution to all persons whose duty it shall be to make returns under this act. The said blanks shall be prepared in the form of books, and the margins shall correspond with the printed titles in the books of the health officer, as required by the twelfth section of this act ; and the health officer, in consideration of such additional services, shall receive the sum of two hundred dollars, besides his present salary, to be paid to him in the manner now directed by law.

[See act of 27 March, 1819, § 2, W. D. p. 14, § 13, repealed by sections 6, 8, of above act.]

### Pittsburg.

16 April, 1870, § 1.  
P. L. 1194.  
P. D. 1482.

Registration in  
Pittsburg.

**300.** The board of health shall furnish separate books in which shall be registered, in the manner hereinafter directed, the returns made to said board of the marriages which may be contracted, and of the births and deaths which may occur in the city of Pittsburg.

**301.** It shall be the duty of clergymen of all denominations, of clerks or keepers of the records of all churches

and religious societies, as also of every magistrate and of other persons, by or before whom any marriage may hereafter be solemnized or contracted, and of every practicing physician, and of every practitioner of midwifery, and of every undertaker, and superintendent or sexton of any cemetery or burial ground, in the said city of Pittsburg, on or before the first day of May next ensuing (the day in which the law goes into effect), to report his, her or their names and places of residence to the health officer, at the office of the board of health; and it shall be the duty of the health officer to have the same properly registered, in index form, in suitable books, to be furnished by the board of health; in the event of any of the persons above specified removing to any other place of residence, it shall be their duty to notify the health officer of the fact, within thirty days after such removal, except where the persons removing shall cease to act in such official capacity, as makes them subject to the provisions of this act.

**302.** Whenever any person shall die in the city of Pittsburg, it shall be the duty of the physician who attended during his or her last illness, or of the coroner (when the case comes under his notice), to furnish to the undertaker or other person superintending the burial, a certificate, setting forth, as far as the same can be ascertained, the full name, occupation, sex, color, age and condition (whether married or single) of the dead persons, and the cause and date of death. In case any person shall die without the attendance of a physician, or if the physician who did attend at the time of the death, refuses or neglects to furnish such certificate, it shall be the duty of the physicians of the board of health, upon being notified thereof, to make the necessary examination in such cases, and give a certificate of death as aforesaid: *Provided*, It be not a case requiring the attendance of the coroner

**303.** It shall be the duty of every undertaker or other person, before removing any corpse for burial, within the city, or elsewhere, to obtain from the board of health a permit so to do, which shall be granted by said board; but before obtaining such permit he shall deposit, in the office of the board of health, the physician's or coroner's certificate, together with his own certificate, setting forth, as nearly as can be ascertained, the birthplace of the party, ward, number and street of late residence in the

16 April, 1870, § 2.

*Ibid*, § 2.

Duties of clergymen, magistrates, physicians, undertakers, sextons, etc.

*Ibid*, § 3.

Physicians to give certificates to undertakers.

*Ibid*, § 4.

No corpse to be interred without such certificate.



16 April, 1870.

city, time of residence therein, place of previous residence, duration of last illness, and the place and date of intended interment; which certificate shall be signed by the undertaker, as well as the physician, or surgeon in attendance at the time of death. And no sexton or other person shall assist in, or assent to, or allow any such interment, or aid or assist about preparing any grave or place of deposit for any such body, for which such permit has not been given authorizing the same; and it shall be the duty of any sexton or other person who shall receive any such permit, to preserve and to return the same to the board of health, on or before the first Monday succeeding each interment.

*Ibid.*, § 5.

Duties of persons practicing midwifery.

**304.** Every person practicing midwifery in the city aforesaid, under whose charge or superintendence a birth shall hereafter take place, shall keep a true and exact register of such birth, and shall enter the same on a blank schedule, to be furnished by the board of health. This schedule shall contain a list of the births which have occurred under his or her care during the month, and shall set forth, as far as the same can be ascertained, the full name of each child (if any name shall have been conferred), its sex, color, the full name and occupation of its parent or parents, the day and place of its birth; and the said schedule shall be delivered, duly signed by the practitioner, in the form of a certificate, on the first day of each and every month, to the health officer, or to any other authorized person. In case the birth of any child shall have occurred without the attendance of a physician or practitioner of midwifery, or should no other person be in attendance upon the mother immediately thereafter, it shall then become the duty of the parent or parents of such child to report its birth to the health officer, in the manner and form, and within the period above required.

Schedule of births to be returned

*Ibid.*, § 6.

Duties of persons celebrating marriages.

**305.** It shall be the duty of every clergyman, and every magistrate, and of the clerk or keeper of the records of all religious and other societies, and of every other person by or before whom any marriage may hereafter be solemnized or contracted, to make a faithful return of the same, at the expiration of every three months, to the health officer, in the form of a certificate, which shall set forth, as far as the same can be ascertained, the full name of the husband, his occupation, the place of his birth, his residence and age, the date of marriage, the full name of the wife previous to the said marriage,

and her age, the color of the parties, and the place where, and the name of the clergyman or other person by whom the marriage ceremony was performed.

**306.** In case any clergyman, magistrate, physician, coroner, midwife, undertaker, sexton, clerk or any other person as aforesaid shall violate any of the provisions of this act, or refuse or neglect to perform any of the duties required by the same, he, she or they shall forfeit and pay, for every such offense, the sum of not less than five nor more than twenty dollars for the use of the board of health; which sum or sums shall be recoverable as debts of like amount, and on non-payment of the same, a *capias ad satisfaciendum* may issue.

16 April, 1870.

Ibid. § 7.  
Penalties for neglect.

**307.** The books or registers kept by the health officer, or a certificate duly certified by him as containing a copy of the record of any marriage, birth or death, shall hereafter be admitted in any court of the state, as *prima facie* evidence of said marriage, birth or death.

Ibid. § 8.  
Registers and certificates to be evidence.

**308.** The registry of marriages, births, and deaths, shall be kept in separate books; and there shall be general indexes to the record of all marriages, births, and deaths, which indexes, shall also be kept in separate books.

Ibid. § 9.  
How registers to be kept.

**309.** The health officer shall receive for the use of the board of health, fifty cents for granting a certificate or certified copy of the record of any marriage, birth or death, and ten cents for making search for either a marriage, birth or death, which sums shall be paid by the party applying for the certificate or search; but the said registers shall, at all times, be accessible to physicians, clergymen and lawyers, without charge.

Ibid. § 10.  
Fees of health officer.

**310.** In order to secure uniformity and despatch in the registration herein provided for, the books shall contain, upon the margin of each page, printed titles, with corresponding blanks for suitable entries for marriages, births and deaths, in the order to-wit:

Ibid. § 11.  
How registers to be prepared.

*Marriages.*—Full name of husband. Occupation. Residence. Birthplace. Age when married. Full name of wife previous to marriage. Residence. Birthplace. Age when married. Time of marriage. Color of the parties. Ceremony employed. Name of the person performing the marriage. Residence of the last named person. Date of certificate. Date of registration.

Marriages.

*Births.*—Full name of the child. Sex. Color. Full name of the father. His occupation. Full name of the

Births.

16 April, 1870.

mother. Date, month and year of the birth, Street and number of house where born. Name of physician or other person signing certificate. His residence. Date of certificate. Date of registration.

Deaths.

*Deaths.*—Full name of the deceased. Color. Sex. Age. Married or single. Occupation. Date of death. Cause of death. Duration of last illness. Birthplace. Ward, number and street of late residence. Time of residence therein. Place of previous residence. Place of intended interment. Date of intended interment. Date of certificate. Date of registration. The board of health shall keep on hand, at all times, a supply of blanks for gratuitous distribution to all persons whose duty it shall be to make returns under this act. The board of health shall have power to make all rules and regulations for carrying the provisions of this act into effect.

Distribution of blanks.

Power of board of health to make rules.

11 April, 1866, § 1.  
P. L. 631.  
P. D. 1481.

311. Where any person may have been married, under the laws of the State of Pennsylvania, previous to the date of the passage of this act, and who may have not received, or who may have lost the original marriage certificate, and the record of said marriage may have been lost \* \* \* the fact may be proven by the affidavit of the party, or parties, so married, and the name of the person who performed the ceremony being given, that due \* \* \* search has been made for said record, and that the same could not be found; and the identity and truth of the party, or parties, be verified by at least two witnesses, who may have known the parties so married, to have lived and cohabited together, as husband and wife, and that their marriage was never doubted or disputed, that an acknowledgment was made in their presence, that they were husband and wife, and the proof being satisfactory to the health officer, a record shall be made, as specified under the law approved March eighth, one thousand eight hundred and sixty, and the supplement thereto.

22 March, 1865, § 1.  
P. L. 560.  
P. D. 1481.

Registration of prior marriages

312. The health officer of the city of Philadelphia shall register, in a book for that purpose, to be furnished by the city commissioners of said city, upon presentation to him of certificates, properly authenticated, by either the affidavit of the clergyman who performed the marriage service, or in case of his death, the affidavit of two persons that were acquainted with his handwriting and knew his signature attached to such certificate of marriage is the genuine signature of such clergyman, such marriages

as have occurred prior to the passage of the act to which this is a supplement; and upon demand made of him by any persons interested, he shall give a certificate of such registration of marriage, duly certified by him, which shall be of like force and effect, as evidence or otherwise, as the certificates provided for in the act to which this is a supplement; and for such certificate he shall be entitled to receive the same fees as are allowed in the said act.

22 March, 1865.

### General Law.

**313.** Whenever boards of health are established by law in the cities of the commonwealth, said boards shall furnish separate books, in which shall be registered, in the manner hereinafter directed, the returns made to said boards of the marriages which may be contracted, and the births and deaths that may occur in said cities.

5 May, 1876. § 1.  
P. L. 113.  
P. D. 1477.

Registration in all  
cities having  
boards of health

**314.** It shall be the duty of clergymen of all denominations, of clerks or keepers of records of all churches and religious societies, as also of every magistrate, and of other persons by or before whom any marriage may hereafter be solemnized or contracted, and of every practitioner of midwifery in said cities, on or before the first day of July next ensuing (the day in which the law goes into effect), to report his, her or their names and places of residence to the secretary of the board of health at the office of the board of health; and it shall be the duty of the secretary of the board of health to have the same properly registered in index form, in suitable books to be furnished by the board of health. In the event of any of the persons above specified removing to any other place of residence, it shall be their duty to notify the secretary of the board of health of the fact, within thirty days after such removal, except when the persons removing shall cease to act in such official capacity as makes them subject to the provisions of this act.

Ibid, § 2.

Duties of clergy-  
men, magistrates,  
physicians, etc

**315.** Every person practicing midwifery in said cities, under whose charge or superintendence a birth shall hereafter take place, shall keep a true and exact register of such birth, and shall enter the same on a blank schedule to be furnished by the board of health; this schedule shall contain a list of the births which have occurred under his or her care during the preceding three months, and shall set forth, as far as the same can be ascertained, the full name of each child (if any name shall have been conferred), its sex, color, the full name and occupation of its parent

Ibid, § 3.

Duties of mid-  
wives.



5 May, 1876.

To return schedule, containing full statistics every three months to board of health.

Where no midwife in attendance parents to make report.

Ibid, § 4

Returns of marriages.

Persons by whom marriages performed to make return to board of health every three months.

Ibid, § 5.

Penalty for violation.

or parents, the day and place of its birth; and the schedule shall be delivered, duly signed by the practitioner, in the form of a certificate, on the first days of October, January, April and July, or within ten days thereafter, to the secretary of the board of health, or to any other authorized person. In case the birth of any child shall have occurred without the attendance of a physician or practitioner of midwifery, or should no other person be in attendance upon the mother immediately thereafter, it shall then become the duty of the parent or parents of such child to report its birth to the secretary of the board of health, in the same manner and form, and within the period above required.

**316.** It shall be the duty of every clergyman, and every magistrate, and of the clerk or keeper of the records of all religious and other societies, and of every other person by or before whom any marriage may hereafter be solemnized or contracted, to make a faithful return of the same, at the expiration of every three months, to the secretary of the board of health, in the form of a certificate, which shall set forth, as far as the same can be ascertained, the full name of the husband, his occupation, the place of his birth, his residence and age, the date of marriage, the full name of the wife previous to the said marriage, and her age, the color of the parties, and the place where, and the name of the clergyman or other person by whom the marriage ceremony was performed.\*

**317.** In case any clergyman, magistrate, physician, midwife, clerk or any other person as aforesaid, shall violate any of the provisions of this act, or refuse or neglect to perform any of the duties required by the same, he, she or they shall forfeit and pay for every such offense, the sum of not less than five nor more than twenty dollars, for the use of the board of health; which sum or sums shall be recoverable as debts of like amount are now by law recoverable, and on non-payment of the same a *capias ad satisfaciendum* may issue.

**318.** The books or registers kept by the secretary of the board of health, or a certificate duly certified by him

\* *Marriage Licenses.* The act of 23 June, 1885, § 1, P. L. 346, P. D. 2234, requires a license to be obtained from the clerk of the orphans' court, before any marriage is performed. And by an amendment to said act passed 23 May, 1887, P. L. 170, P. D. 2235, in order to obtain such license the person or persons applying therefor must verify by oath before the clerk the legality of the proposed marriage.

as containing a copy of the record of any marriage or birth, shall hereafter be admitted in any court of the state as *prima facie* evidence of said marriage, birth or death.

**319.** The secretary of the board of health shall receive and pay into the city treasury, fifty cents for granting a certificate or certified copy of the record of any marriage or birth, and ten cents for making a search for either a marriage or birth, which sum shall be paid by the parties applying for the certificate or search; but the said register shall at all times be accessible to physicians, clergymen and lawyers without charge.

**320.** In order to secure uniformity and dispatch in the registration herein provided for, the books shall contain upon the margin of each page, printed titles, with corresponding blanks for suitable entries for marriages and births, in order to wit:

*Marriages*—Full name of husband, occupation, residence, birthplace, age when married; full name of wife previous to marriage, residence, birthplace, age when married, time of marriage, color of parties, ceremony employed, name of person performing the marriage, residence of the last named person, date of certificate, date of registration.

*Births*—Full name of the child, sex, color; full name of the father, his occupation; full name of the mother; day, month and year of the birth; street and number of house where born; name of physician or other person signing certificate; his residence; date of certificate, date of registration.

**321.** The said boards of health shall have power to make all rules and regulations for carrying the provisions of this act into effect: *Provided, however,* That the provisions of this act shall not apply to cities of the first and second classes.

5 May, 1876.

Registers of board of health to be evidence of birth, marriage or death.

Ibid, § 7.

Fees for certificates and searches.

Ibid, § 8.

Form of registry.

Marriages.

Births.

Ibid, § 9.

Power of boards of health to make rules.

#### XIV. CEMETERIES AND BURIALS.

**322.** The mayor, aldermen and citizens of Philadelphia, in common council assembled, shall have power, by their ordinance for that purpose, to prohibit any future interments within such parts of the city of Philadelphia wherein they shall judge such prohibition necessary, and

22 April, 1794, § 21.  
3 Dal, 553.  
D. P. D. 32.

Power of councils to prohibit interments.

22 April, 1794.

29 January, 1818, § 26.  
P. L. 52.  
W. D. 12.

Physicians to leave  
a note at house  
where any one has  
died, specifying  
name, disease, etc.,  
of deceased.

Penalty for non-  
compliance.

No sexton to per-  
mit interment  
without receiving  
such note in writ-  
ing.

Sexton to enter  
contents of said  
note on blank  
schedule to be de-  
livered every Sat-  
urday to health of-  
ficer for publica-  
tion.

Penalty.

31 March, 1860, § 47.  
P. L. 395.  
P. D. 220.

Wanton injury to  
cemeteries, etc.,  
and violation of  
sepulchre.

to impose such fines for any breach of such ordinance as they may deem necessary.\*

**323.** Whenever any person shall die in the city, districts or townships aforesaid [Philadelphia], the physician or surgeon who shall have attended such person, as a physician or surgeon, during his or her last sickness, shall leave a note in writing, signed with his name, with some one of the family in the house where such person shall have died, specifying the name and apparent age of the deceased, and the disease of which he or she shall have died. And every physician or surgeon refusing or neglecting to make and deliver such note shall forfeit the sum of five dollars. And that no sexton of any church, or other person having charge of any cemetery, vault or burying ground, in the city, districts, or townships aforesaid, shall permit any dead body to be interred therein, until he has received such note in writing so signed as aforesaid; or in case no physician or surgeon shall have attended such deceased person, or the physician or surgeon who did attend shall have neglected or refused to leave such note, then a like note signed by some of the family in which such person shall have died. The contents of which note, in writing, shall be entered by such sexton on a blank schedule to be furnished by the clerk of the health office, or such other person as the board of health shall direct, and delivered, together with the said schedule, on the Saturday of every week, to the health officer for publication in such form as may be designated by the board of health. And that every sexton, or other person having charge of any place of interment, neglecting or refusing to perform any of the duties required by this act, shall forfeit the sum of twenty-five dollars.

**324.** Any person who shall wilfully and maliciously destroy, mutilate, deface, injure or remove any tomb, monument, gravestone or other edifice, placed in any cemetery or graveyard, appropriated to and used for the interment of human beings, in this commonwealth, or shall wilfully and maliciously injure, destroy or remove any fence, railing or other work for the protection or ornament of such places of interment; or shall wilfully open

\*The acts regulating the duties of clergymen, magistrates, physicians, undertakers, sextons, etc., with regard to registration of deaths and interments, will be found under XIII, **Registration of Vital Statistics.**

any tomb, vault or grave, within the same, and clandestinely remove any body or remains therefrom; or maliciously destroy any tree or shrubbery growing in such cemetery or graveyard; shall be guilty of a misdemeanor, and on conviction of either of the said offenses, be sentenced to undergo an imprisonment not exceeding one year, or pay a fine not exceeding one thousand dollars, or both or either, at the discretion of the court.\*

**325.** It shall not be lawful to open any street, lane, alley or public road through any burial-ground or cemetery within this commonwealth,† any laws heretofore passed to the contrary notwithstanding: *Provided*, That this section shall not extend to the city and county of Philadelphia.

**326.** When any church of the city or county of Philadelphia shall resolve to purchase and use a new place of burial for the congregation of said church, or to remove thereto the remains of such deceased persons as may have been interred in a former place of burial, they shall certify such fact to the board of health by the proper officer of such church: and the board of health, thereupon, unless they shall determine the proceeding to be inju-

31 March, 1860.

5 April, 1849, § 1.  
P. L. 397.  
P. D. 229.

Opening streets  
through ceme-  
teries.

10 April, 1852, § 5.  
P. L. 657.  
P. D. 229.

Removal of church  
burial grounds in  
Philadelphia.

\*This section is the consolidation of various enactments found in laws incorporating cemetery companies, and in general laws, having for their object the repression of the violation of sepulture; such are the second section of act 5 April, 1849, P. L. 397, and the act 7 May, 1855, P. L. 462. See act 10 Feb., 1871, P. L. 38, containing special provisions for Beaver county, essentially the same as 31 March, 1860, §47, *supra*. The act of 19 May, 1879, §1, P. L. 64, P. D. 452, punishes by fine or imprisonment any wilful injury to flowers, shrubbery, etc., in cemeteries, and trespass upon private enclosures in the same.

By the act 16 March, 1861, P. L. 136, no slaughter-house, manure or bone-dust factory, soap factory, distillery or tannery, shall be erected within two hundred yards of any incorporated cemetery.

†A subsequent statute appointing commissioners to survey and lay out such streets, within the limits of a borough, as they shall deem necessary, does not empower them to locate a street over any part of a burial ground. *Egypt street*, 2 Grant, 455. But in the case of *Twenty-second street*, 102 Penn. St. 108, it was held that all special acts prohibiting the opening of streets, etc., through cemeteries, in cities, were repealed by the act 8 June, 1881, P. L. 68, viz:—"Section 13. The municipal authorities and courts having jurisdiction in any city of this commonwealth, shall have exclusive control and direction of the opening, widening, narrowing, vacating, and changing grades of all streets, alleys and highways within the limits of such city, and may open or widen streets, at such points and of such width, as may be deemed necessary by such city authorities and courts, any private or special statute to the contrary notwithstanding." \* \* \* \*



10 April, 1852.

9 April, 1873, § 1.  
P. L. 65.  
P. D. 229.

Powers of watchmen, etc., in cemeteries.

13 May, 1876, § 2.  
P. L. 159.  
P. D. 228.

Jurisdiction of the courts of quarter sessions over burial grounds.

Removal of bodies.

Ibid, § 3.

Transfer of cemeteries to borough authorities.

Such transfer to be made without cost to borough.

May alter the original plot of cemetery.

rious to the public health, shall grant a permit for the same, in the manner that they now do in individual cases.

**327.** [This act authorizes all organized cemetery companies to appoint watchmen, who, together with all superintendents, gardeners and agents, stationed on the cemetery grounds, upon taking an oath of office similar to that required of constables, shall exercise all the powers of police officers within and adjacent to said grounds, in the arrest of persons engaged in violating the laws for the protection of cemeteries.]

**328.** Authority is hereby vested in the court of quarter sessions of the several counties of this commonwealth to make such orders and decrees for the regulation and care of burial grounds, situated in and adjacent to incorporated boroughs, as the public good shall require; and when any such burial ground shall become so neglected as, in the opinion of said court, to become a public nuisance, the court may direct the removal of the dead therefrom, by the proper borough authorities, to some other properly regulated burial ground, and may enforce, by proper process, orders and decrees made under this act.

**329.** Upon petition of the managers and officers of any incorporated cemetery company, and a majority of the taxables of the borough to which it is proposed to transfer such cemetery, the said court may authorize the transfer of any cemetery to the borough authorities of any borough in which such cemetery may be located or adjacent thereto; and such transfer shall be made without cost to such borough; and upon such transfer being made, such borough authorities shall hold and exercise the power and privileges of such incorporated company, and may purchase lands within or beyond such borough limits, not to exceed thirty acres, for the extension of such cemetery, if the same be deemed necessary, and may raise the means by sale of lots or otherwise, but in no event by taxation, to pay for the same, and perform such other duties as may be deemed necessary in the premises; they may lay out the grounds so purchased, and change or alter the original plot of such cemetery, \* \* \* \* in changing or altering the plot of any such cemetery, the dead bodies may be removed and reinterred in a suitable place without cost to surviving friends.†

† This act is supplementary to the act 19 May, 1874, §§ 1, 2, P. L. 208, P. D. 228, but in effect supersedes it.

**330.** [This act provides that when any burial ground belonging to any religious society or church has ceased to be used for interments, the courts of quarter sessions of the several counties, upon the petition of the managers, etc., of such church, setting forth that the erection or improvement of buildings for religious purposes of such society are interfered with, to the detriment of such society and of the public good, may, after a full hearing of the parties therein, authorize and direct the removal of the remains of the dead from so much of such burial-ground as may be needed for buildings for religious purposes only.]

Such removal to be made by such managers, in a careful manner, to other parts of the same burial-ground, or to some other properly regulated cemetery in the vicinity: *Provided, however,* That before such removal, said managers shall publish, for four consecutive weeks, in two newspapers, a notice of their intention to remove said remains in pursuance of this act: *And provided further,* That friends of such dead may so remove said remains, at any time during said proceedings, before actual removal by said managers.]

The erection of a building for Sunday-school and lecture rooms, is such religious purpose.—*Craig v. Presbn. Church*, 88 Penn. S. 42 (see dissenting opinion of Agnew, C. J.). Otherwise of general buildings.—*Teffreys v. Pittsburg*, 30 Pitts. Law Jour. 21.

The grant of a burial lot, by certificate, subject to the conditions and regulations contained in the deed to the trustees, conveys no interest in the soil; the bodies interred therein may be removed, under the authority of an act of assembly, whenever the land ceases to be occupied for such purpose; such act is constitutional.

The disinterment of a body is a misdemeanor at common law. The power of disinterment is a police power and can be delegated by the legislature to municipalities.—*Kincaid's Appeal*, 66 Penn. St. 411. It cannot be considered as established in Pennsylvania that the next of kin are exclusively entitled to decide upon the place of burial of a deceased person; and the remains, if interred by decedent's husband in his burial lot, will not be removed on the application of her relatives, against his will. But a court of equity will regulate such controversies according to the proprieties of the case, as a question of the repose of the dead.—*Gampher v. Poulson*, 19 W. N. C. 230.

**331.** When, by the growth of cities, towns and boroughs, and the opening of incorporated or unincorporated cemeteries in cities and boroughs, or in the vicinity thereof, or from other causes, any burial ground belonging to or in charge of any religious society or church, directly, or through trustees thereof, or in the charge of no person, persons, church or society, has ceased to be used for in-

18 April, 1877, § 1.  
P. L. 54.  
P. D. 228.

Courts may order the removal of the bodies of the dead from burial grounds, when needed for buildings for religious purposes.

12 May, 1887, § 1.  
P. L. 96.  
P. D. 2146.

Courts of quarter sessions authorized to direct the removal of dead bodies from certain burial grounds.

12 May, 1887.

Petition to be presented to the court.

Contents of said petition.

Public notice thereof to be given.

Members of the church or society to authorize the application for order of removal.

Ibid., § 2.

Removals regulated.

Courts may enforce orders and decrees made under this act.

Public notice of removals to be given.

Relatives and friends may remove remains

terments, or has become so neglected as, in the opinion of the court, to become a public nuisance, or that the remains of bodies interred in any such neglected or disused cemetery in any city or borough interfere with and hinder the improvements, extensions and general progressive interests of any city or borough, the court of quarter sessions of the several counties of this commonwealth, upon petition of the managers, officers, or on the petition of fifty or more citizens, or residents in the vicinity, in cases where such cemetery or graveyard is not in the charge of any person, persons, church or society, or trustees of such society or church, setting forth that the erection, extension, improvements and general progressive interests of such city or borough are hampered and interfered with and the welfare of such city or borough is injured to the detriment thereof and of the public good, and after three weeks' advertisement of hearing in open court for the purpose, may, after a full hearing of the parties, their proofs and allegations, authorize and direct the removal of the remains of the dead from such burial grounds: *Provided*, That no such application shall be made by the managers, officers or trustees of such society or church, except in pursuance of the wishes of a majority of the members of such society or church expressed at a meeting held for that purpose, after two weeks' public notice.

**332.** Such removal to be made by such managers, officers, or by the authorities of such city or borough, when such burial ground is not in the charge of any person, persons, church or society, trustees of such society or church, or under their direction, in a careful manner, at their own expense, to such other burial ground or grounds they may select for said purpose, or if desired by the relatives or friends of such dead to some properly regulated burial ground or cemetery in the immediate vicinity, and said courts may enforce, by proper process, orders and decrees made under this act: *Provided, however*, That before removing any of said bodies said managers, officers, trustees, city or borough authorities shall publish, for two successive weeks, in two daily or weekly newspapers of such city, borough or county wherein such burial ground is located, a notice declaring their intention to remove said remains in pursuance of this act: *And provided further*, That relatives and friends of such dead shall have the right to so remove said remains at any time during said proceedings at their own expense

before actual removal by such managers, officers or trustees: *And it is further provided*, That all bodies, when so removed, shall be placed in separate caskets and graves, and the headstones, monuments or other marks placed by the remains of said bodies shall be taken by the persons authorized to make such removal and placed as near as can be in the same relative position as before removal.

Remains to be placed in separate caskets and graves.

**333.** The trustees, treasurer or other proper officers of any church, congregation, presbytery or other church organization, owning real estate used as a burying ground, may, whenever so desired by a majority vote of such church congregation or church organization, owner or owners as aforesaid, apply by petition to the court of common pleas of the county, wherein such real estate may be located, for leave to abandon such burying grounds, remove and reinter the bodies of deceased persons therein buried, and to sell such real estate in fee, clear of all restriction. Upon presentation of such petition the court shall make such order relating to publication and notice to parties in interest as may seem meet and proper, and, after final hearing of all parties in interest, may make such decree relating to the abandonment of such grounds for burial purposes, the removal of bodies therefrom and the sale thereof, as may be just and equitable; and, when no person in interest can be found, said bodies to be removed and *separately* reinterred in some suitable burying ground, and *each grave* to be properly marked by head stone, *et cetera* (provided such grave was so marked before removal), by the trustees, treasurer or other proper officer or officers of the church, congregation, presbytery or other church organization, owning the real estate so used as a burying ground: *Provided*, That no such petition shall be granted except upon condition set forth in the decree, requiring the petitioners to purchase the rights of all lot holders in such burying grounds to secure the consent in writing of the near relatives of decedents, whenever such relatives shall appear as parties to such proceedings: *And provided further*, That any party in interest may appeal from the decree of such court within thirty days.

23 May, 1887, § 1.  
P. L. 168.

Church officers may petition the court for leave to abandon burying ground, etc.

Court to direct proper notice to be given.

And make decree of abandonment, etc.

When bodies to be removed, etc., by church officers.

Conditions to be set forth in the decree of court.

Parties interested may appeal.



## XV. EXPLOSIVES.

### Petroleum Oils, Saltpeter, Gunpowder, Nitro-Glycerine, Firearms and Fireworks.

(SEE VIII, 147. OFFENSIVE TRADES.)

15 May, 1874, § 1.  
P. L. 189.  
P. D. 1326

Test of burning  
fluids.

Ibid. § 2.

Determined by an  
inspector.

Formula

Ibid. § 3.

Inspectors to be  
appointed.

Ibid. § 4.

Term of office.

**334.** No refined petroleum, kerosene, naphtha, benzole, gasoline or any burning fluid, be they designated by whatsoever name, the fire-test of which shall be less than one hundred and ten degrees Fahrenheit, shall be sold or offered for sale as an illuminator, for consumption within the limits of the Commonwealth of Pennsylvania.

**335.** Said fire-test shall be determined by an inspector appointed under the provisions of this act, who shall use Tagliabuie's, or such other well-defined instrument as may be used by the inspectors of export oil, according to the following formula: Heat with alcohol small flame; when thermometer indicates ninety degrees, remove lamp; at ninety-five, try for a flash, with small bead of fire on end of string, held within a quarter of an inch of surface of oil; replace lamp, and work oil up gradually from this point until the burning point is reached, removing lamp every four degrees, and allowing oil to run up three degrees, before replacing lamp, flashing oil each time, just before lamp is replaced, until result is attained.

**336.** The said inspector shall be appointed by the courts of common pleas, one in each county in the commonwealth wherein said burning oils or fluids, as before mentioned, are manufactured: *Provided*, That in any county where there shall be more than one court of common pleas, the said appointments shall be made by court number one in said counties, and in any county wherein is situated a city of more than three hundred thousand inhabitants, in such case, in lieu of court number one, the appointment of inspector shall be made by the mayor of said city.

**337.** The said inspectors shall hold their office for the term of three years, unless sooner removed by the appointing power for incompetency, or found guilty under the provisions of this act; vacancies in said office to be filled by the authority in which the appointing power is

vested by this section. The said inspectors shall be authorized to appoint such clerks or deputies as they may find requisite for the carrying out of the duties specified under this act; the said clerks and deputies shall be paid out of the fees of the office, by the inspector of the county wherein the service is performed; all clerks and deputies are held answerable by this act, and subject to the same penalties for violating any of its provisions as are provided in this act for the punishment of the appointed inspectors. Each inspector, deputy or clerk, after receiving his appointment, and prior to entering upon the duties of the office for which he is appointed, shall file in the office of the prothonotary of the court of common pleas, an oath or affirmation that he will well and truly perform the duties of his office, and carry out the provisions of this act, and said inspectors shall also file a bond, with one or more approved securities, in style similar to that of the sheriff of the county, in the penal sum of ten thousand dollars, for the faithful performance of the duties of the said inspector's office, as provided in this act. The said inspector is hereby empowered to receive and collect from the manufacturer or owner the sum of twenty cents per package for each package inspected, in any lot under ten; ten cents per package for each package inspected in any lot not more than fifty; seven cents per package for each package inspected in any lot or all lots over fifty; and one dollar for each car of bulk refined oil; and in case any person shall call upon said inspector to inspect one package of refined oil, he shall charge said person for such inspection fifty (50) cents. The said inspector shall provide, at his own cost, stencils for the purpose of branding packages, to read thus: "State of Pennsylvania, fire-test one hundred and ten degrees," with name of inspector: *Provided*, When oil so inspected shall stand higher test, the inspector shall designate such actual test by his brand. The said inspectors or his clerks or deputies, shall and are hereby empowered to enter any place or building where oils or fluids, as before designated in this act, are manufactured, kept in store for sale or consumption, in this commonwealth, and in such counties wherein oil is sold and not manufactured, for which no inspector has been appointed, or in any other place within the limits of this state, wherein he has reason for believing that oil is being kept or sold contrary to the provisions of this act, or for the

15 May, 1874.

Inspectors may appoint clerks and deputies.

Oath of office.

Bond.

Fees for inspection.

Inspector to provide stencils.

Powers and duties of inspector.

15 May, 1874

purpose of carrying out the true intent and meaning of this act; any inspector shall have the privilege to re-inspect, and is hereby empowered to inspect any oil, as hereinbefore designated in section first, which he may, by any reason, believe to be under fire-test, and if so found by him to be under fire-test and falsely branded, he shall prosecute or cause to be prosecuted the offender, as herein authorized in section four of this act; no charge shall be made for re-inspection.

*Ibid.*, § 5.  
Penalty.

**338.** Any person violating any of the provisions of this act shall, upon conviction thereof, be deemed guilty of a misdemeanor, and shall be subject to a fine of not less than two hundred and fifty (\$250) dollars, nor more than five hundred (\$500) dollars, or imprisonment not less than one year, or both, at the discretion of the court; one-half of said fine to go to the prosecutor and one-half to the school fund in the district where such misdemeanor may have been committed. Also, if any person shall sustain damage to his property or injury to his person, by reason of a violation of any of the provisions of this act by another person, the person guilty of said violation shall be liable to the person injured for all damages sustained thereby.

Liability for damages.

*Ibid.*, § 6.  
When oils to be subject to seizure and sale.

**339.** All the oils or fluids subject to inspection under this act, that may be found in the hands of those who sell in less quantities than one barrel, with a fraudulent brand or mark of inspection, or found to have been adulterated or not coming up to the fire-test, as the mark of inspection would indicate, shall be subject to seizure by the said inspector, and the same shall, after ten days' public notice, be sold solely for re-distillation; the proceeds of such sale, after deducting the necessary expenses of sale and seizure, shall one-half be given to the public school fund wherever the seizure was made, and one-half to the informer.

*Ibid.*, § 7.  
Penalty for breach of official duty.

**340.** Any inspector or deputy appointed under this act, who shall violate any of its provisions by neglecting to inspect upon request, or shall falsely brand any oil or fluid, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than two hundred and fifty dollars nor more than one thousand dollars, and be subject to imprisonment for not less than three months or more than one year, or both, subject to the discretion of the court; one-half the fine to go to the in-

former and one-half to the school fund of the district wherein the offense was committed.

**341.** Packages containing oil manufactured for export shall be branded with a stencil by the manufacturer with the words "for export;" all benzine, naphtha or any hydro-carbons created in the manufacture of refined oil from crude pétroleum, or otherwise manufactured, shall be inspected and branded "benzine," and shall not be kept for sale or used in any way for giving light to be burned in lamps; and this act shall not be construed to prohibit their use in making gas to be conveyed through pipes to burners similar to gas in city gas works, to be used for the same purpose: *And further*, The penalties for violating this section shall be the same as applied to the use of refined oil below legal test.

15 May, 1874.

How packages for exportation to be branded.

**342.** Nothing contained in this act shall be construed or held to apply in any manner, to any kind of oil or fluid manufactured for export from this state, or in transit from one state to another through the limits of this commonwealth.

Ibid. § 9.

Not to apply to oils manufactured for exportation.

**343.** Any person or persons who shall sell or cause to be sold any barrel or package, or who shall refill the same without first removing the brand of the inspector, shall be liable to a fine of three hundred dollars for every barrel or package sold or delivered or refilled; said fines shall be recoverable as other fines of like character are recoverable by law, and one-half shall go to the informer, and one-half to the school fund of the district in which the offense was committed.

Ibid. § 10.

**344.** No petroleum, benzine, benzole or naphtha shall be refined or manufactured within the city of Philadelphia, on the eastern side of the river Schuylkill, between Allegheny avenue and Mifflin street, excepting thereout the area southward of Washington street, and between the river Schuylkill and Thirtieth street, or on the western side of the river Schuylkill, south of Girard avenue and east of Forty-third street; nor shall the same be kept stored in any building or other premises, within such limits, in any greater quantity, at any one time than twenty-five barrels of refined petroleum and one barrel of crude petroleum, one barrel of benzine, benzole or naphtha, respectively; the said barrels to be kept or stored in buildings with cellars of sufficient depth, or in premises properly excavated or embanked to prevent any overflow of the fluids therefrom, under forfeiture, as here-

2 March, 1865, § 1.  
P. L., 262.  
B. P. D., 885.

Storage of certain explosives regulated in Philadelphia.

Limits specified.

Suitable store-houses.



2 March, 1865.

inafter directed, of the entire quantity of each and all of the said articles of merchandise, that shall be so refined, kept or stored contrary to the restrictions of this act.

Nothing herein contained shall prevent the refining, storing or depositing of crude or refined petroleum, or coal oil on the west side of the Schuylkill east of Thirtieth street, between Bridge and Arch street, and between Chestnut street and South street, on premises with sufficient excavations or embankments to prevent the overflow or escape of the oil so refined, stored or deposited, in case of fire or accident.

No refining of petroleum, benzine, benzole or naphtha shall be carried on within five hundred feet of the east or west side of the river Schuylkill, within the said city, north of the line of Girard avenue. †

License required to be obtained from the mayor on certificate from fire marshal.

It shall not be lawful to keep or store the said quantities of refined petroleum, crude petroleum, benzine, benzole or naphtha within the designated limits, without license therefor first had from the mayor of the city of Philadelphia, upon due certificate, to be given by the fire marshal of the said city, that the cellar, excavation or premises in which storage as aforesaid, shall be authorized, will afford reasonable security from special danger in case of accidents or fire, for which license the sum of ten dollars shall be paid to the city treasury; and such license to be renewed for each calendar year upon annual payment as aforesaid. \* \* \* \*

Ibid. § 2.

Cannot be refined or stored within one hundred feet of any dwelling without the consent of the owner thereof.

License

**345.** It shall be lawful to refine, manufacture, store and keep petroleum, benzine, benzole, and naphtha in such quantities as may be desired in those portions of the city of Philadelphia, east and west of the river Schuylkill, not included within the limits designated in the first section of this act for prohibiting therefrom, *Provided*, That the same be at least one hundred feet distant from any dwelling, without the written consent of the owner thereof: *And provided further*, That a license be first had from the mayor of the city of Philadelphia, for which ten dollars shall be paid into the city treasury, and likewise for the annual renewal thereof, after certificate to be given by the fire marshal of the said city, upon actual survey and inspection of the building or premises in which said commodities shall be refined, kept or stored,

† But by act 24 March, 1865, § 2, P. L. 749, this does not apply to the Belmont petroleum works, located on the river road, above the Columbia bridge in the Twenty-fourth ward.

or are designated so to be, that the said building or premises have suitable tanks, cellars, excavations or embankments, to prevent the overflow or escape of petroleum and like commodities in the event of accident or fire; which certificate of survey and inspection shall be returned to the mayor; whereupon if the same be approved by him, he shall issue his license in accordance with the provisions of this act.

2 March, 1865.

346. Whenever any inhabitant of the said city shall make oath or affirmation, before the mayor of the city of Philadelphia, which shall afford probable cause to believe that any petroleum, benzine, benzole, or naphtha is improperly stored, kept or refined, contrary to the provisions of this act, it shall be lawful for the said mayor to issue his warrant or warrants to any police officer of the said city, or other fit persons, commanding him or them to search for such petroleum, benzine, benzole or naphtha, wherever the same may be in violation of the provisions of this act, and if found, to seize and take possession of the same, and cause the same to be removed to such safe place as the mayor shall thereupon designate in writing.

Ibid, § 3.

Seizure of petroleum, etc., refined or stored contrary to act.

347. All persons refining, or manufacturing, depositing or storing petroleum, or coal oil, benzine, benzole or naphtha, on the west side of the river Schuylkill, east of Thirtieth street, between Arch street and Bridge street, and between Chestnut street and South street, as authorized by the act to which this is a supplement,\* shall, besides having on their premises suitable tanks, excavations or embankments to prevent the overflow, or escape of the oil so refined, stored or deposited, be required to obtain a license from the mayor of the city of Philadelphia, for which the sum of ten dollars shall be paid into the city treasury and likewise for the annual renewal thereof, upon due certificate to be given by the fire marshal, and approved by the mayor of said city, that such premises are so constructed and arranged as to afford reasonable security from danger, in case of accident or fire.

24 March, 1865. §  
P. L. 749.  
B. P. D. 887.

348. So much of the first section of the act to which this is supplementary,\* as prohibits the refining of petroleum, benzine, benzole or naphtha within five hundred feet of the east or west side of the river Schuylkill, shall not be construed to apply to the Belmont petroleum works, located on the river road above the Columbia bridge, in the Twenty-fourth ward of the city of Philadelphia.

Ibid, § 2.

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\* I. e. act 2 March, 1865, P. L. 262, above, 344.

24 March, 1865, § 3.

349. It shall be lawful to refine, manufacture, store and keep petroleum, benzine, benzole and naphtha in such quantities as may be desired, in that portion of the said city of Philadelphia lying south of Dickerson street, and east of Otsego street, subject to all the provisions and restrictions of the second section of the act to which this is a supplement.

Ibid. § 4.

350. The fire marshal shall be entitled to charge, demand and receive, for his own use, from each applicant for examination of the premises and license under this act, and the act to which this is a supplement, before such examination is made, the following fees, to-wit: For every examination of a storage depot, where the quantity allowed by law shall not exceed twenty-five barrels, and for every refinery or manufactory the sum of ten dollars; for all other examinations required by law, the sum of five dollars.

23 May, 1871, § 1.  
P. L. 1053  
B. P. D. 886.

351. The boundaries for the manufacture and the storage of petroleum, benzine, benzole or naphtha be and are hereby extended north to Moore street, between Twenty-fourth street and Twenty-fifth street, in the Twenty-sixth ward, of the city of Philadelphia.

The manufacturer of a dangerous explosive oil, who sells it for illuminating purposes, is responsible to a person injured, though it has passed through the hands of a number of intervening purchasers, if its identity be established.—*Elkins v. McKean*, 79 Penn. St. 493.

The keeping of turpentine and benzine upon the premises, for sale, in violation of the conditions of a policy of insurance, renders it void; though it be the custom to keep it in simple country stores, as part of the ordinary stock of merchandise.—*Lancaster Fire Insurance Co. v. Lenheim*, 89 Penn. St. 497. A clause prohibiting the keeping or having upon the insured premises of any petroleum, benzine, camphene, etc., is not violated by the use of benzine, with due precaution, for the purpose of cleaning machinery; it refers to a permanent or habitual storage.—*Mears v. Humboldt Ins. Co.*, 92 Penn. St. 15. Keeping petroleum on the premises as fuel will vitiate a policy prohibiting it except for lights.—*White v. Assurance Co.*, 18 W. N. C. 279.

### Saltpetre.

8 April, 1851, § 12  
P. L. 384  
B. P. D. 913.

Storage of salt-  
petre in buildings,  
or ships lying at the  
wharf.

352. It shall not be lawful for any person to store, or deposit, or keep in any warehouse, store, cellar, or other place within the limits of the city of Philadelphia, or the incorporated districts of the county of Philadelphia, or in any ship, vessel, or other craft lying at or made fast to any wharf in front of said city or incorporated districts, any greater quantity of saltpetre at any one time than three kegs or three hundred pounds; and any person or

persons who shall store, or deposit, or keep any saltpetre in violation of this act shall forfeit and pay for each and every offense the sum of one hundred dollars, to be recovered as debts of like amount are by law recoverable; one-half of said sum to be paid to the informer, and the other half to the use of the guardians of the poor of the Blockley almshouse; and the whole quantity of saltpetre so stored, deposited, or kept over and above the quantity of one hundred pounds as above named, shall be forfeited to the use of the informer: *Provided*, That nothing herein contained shall be so construed as to affect the reception and storage in any forwarding house located in said city or county, for a period not exceeding forty-eight hours, such quantity or quantities as may be offered and intended for transportation over any of the public works of the commonwealth.

8 April, 1851.

Penalty.

Larger quantities  
may be stored in  
forwarding houses  
for forty-eight  
hours.

**353.** If any person shall appear before the mayor of the city of Philadelphia, or before any alderman in said city or county, and shall upon oath or affirmation declare that there is reason to believe that there is a greater quantity of saltpetre than is authorized by the foregoing section of this act stored, deposited, or kept in any warehouse, store, cellar, shop, or other place within the limits of said district, or in any ship, vessel, or other craft lying at or near any wharf in front of said city or district, it shall be the duty of said magistrate to issue his warrant under his hand and seal commanding any constable or police officer for the time being to search in the daytime for saltpetre forbidden by this act, and for that purpose, if necessary, shall break open and enter by forcible means all such places in which it shall be alleged upon the oath or affirmation of said informant saltpetre is kept in violation of this act, and said officer shall seize and remove the same beyond the limits of said city and districts, and sell the same at public sale or vendue, and after paying the expenses necessarily incurred in carrying this act into effect, shall pay the remainder of the proceeds of said sale into the hands of said informer, and said officer or informer shall not be sued for entering said property, nor for seizing, removing, detaining, or selling said saltpetre, nor shall any writ of replevin issue therefor, but all writs, actions, or cause of actions that may be brought against said officer or informer are hereby declared illegal and abated.

Ibid, § 13.

Right of search for  
saltpetre unlaw-  
fully stored.

Saltpetre so seized  
to be sold at public  
sale.



14 April, 1851, § 9.  
P. L. 551.  
B. P. D. 914.

Landing of salt-  
petre at Philadel-  
phia and its tempo-  
rary storage not  
prohibited.

**354.** So much of the act entitled "An act to incorporate the Towanda and Burlington plank-road company," and for other purposes, as relates to the storage of saltpetre, shall not be construed as to prohibit or in anywise obstruct the landing of saltpetre from any vessel at the port of Philadelphia, and its temporary storage in any outhouse or building for the purpose of facilitating the landing thereof, or the exportation or transshipment of the same; nor shall it be so construed as to prohibit the storage or deposit of saltpetre by any person in any building which may stand fifty feet distant from any other building owned or occupied by any other person or persons; and it shall and may be lawful to deposit and keep saltpetre in any cellar in the city of Philadelphia or incorporated districts of the county: *Provided*, There shall not be any sugar, molasses, rosin, pitch, tar, turpentine, sulphur, lard, butter, linseed oil, whale or olive oil stored in the same building at the same time.

20 March, 1856, § 9.  
P. L. 139.  
B. P. D. 914.

Provisions of this  
act relative to gun-  
powder extended to  
saltpetre.

**355.** All and singular the provisions of this act relative to the recovery of any penalty and the seizure and forfeiture of gunpowder or gun-cotton,\* be and they are hereby extended to the recovery of any penalty, and the seizure and forfeiture of all saltpetre introduced, stored, deposited, or kept in said city, in violation of the acts relative thereto now in force in said city, and the said penalty and forfeiture shall be to and for the use of the aforesaid Philadelphia Association for the Relief of Disabled Firemen, against whom all suits or actions for its recovery shall be brought in accordance with the provisions of this act.

### Gunpowder.

28 March, 1787, § 3.  
2 Sm. 402.  
B. P. D. 728.

Gunpowder brought  
in ships to be de-  
livered at the mag-  
azine within forty-  
eight hours.

**356.** Every captain or master of, or merchant owning, any ship or vessel, bringing therein into such part of the port of Philadelphia, as lies between the southern boundary of the district of Southwark and the northeastern boundary of the township of the Northern Liberties, any gunpowder, for sale or other purpose, shall, within the space of forty-eight hours from the arrival and coming to anchor of said ship or vessel, within the limits aforesaid, and before such ship or vessel shall be brought to any wharf of the said port, within the said limits, deliver, or cause to be delivered, all the gunpowder above thirty pounds weight, brought as aforesaid, at the magazine,

\*See below, **372.**

under the penalty of forfeiting at and after the rate of twenty pounds for every cask of gunpowder so withheld and not delivered as aforesaid, together with the whole of such gunpowder above the said thirty pound weight, if such gunpowder be the property of the offender; and in order that strangers may be the better apprised of the tenor of this act, the health officer and his deputies are required and enjoined, as soon as they have opportunity, to give information thereof to such captain, master or merchant; and the custom house and naval officers, and their deputies, are required and enjoined to give such information to the captains or other persons coming to their several offices, to make entry or report of their arrival, or of their cargoes.

**357.** If any gunpowder stored in the magazine be intended for exportation, it shall not be delivered on board of the vessel intended to export the same, while she remains at any of the wharves in such part of the city of Philadelphia, but after removal of any such gunpowder, for the purpose aforesaid, from the said magazine, it shall be immediately delivered into some boat or craft, to be used for conveying it on board of such vessel, and which boat or craft shall be ready to receive and convey the same to such vessel, and shall forthwith carry it on board thereof, under penalty of forfeitures of such gunpowder, and of the sum of twenty pounds, to be paid by any person so offending, and of the further sum of fifteen pounds for every hour such boat or craft shall remain at any such wharf, after taking or receiving such gunpowder on board, and such gunpowder shall not be unloaded from any cart, dray, or other carriage, on any wharf within the said city and the aforesaid adjacent country, until the boat or craft into which it is to be delivered, for the purpose of conveying it to the vessel intended to export the same, shall be ready to receive it, under the penalty of twenty pounds, to be forfeited by every person so offending.

**358.** All gunpowder brought by land into the said city or adjacent country, within two miles of said city, if above thirty pounds weight at one time, shall be immediately carried to the magazine, and delivered to the superintendent thereof, or his deputy, within the hours hereinafter prescribed for his attendance at the said magazine, under the same penalties as if brought by water, and not delivered, as in such case is herein directed, at the same magazine.

28 March, 1787.

Penalty, the forfeiture of part of the powder.

Measures taken to inform strangers of this act.

Ibid, § 4.  
W. D., 464.

Gunpowder not to be delivered on board vessels while lying at wharves.

To be conveyed to vessels in boats.

Penalties.

Ibid, § 5.

Gunpowder brought by land subject to same regulations.

28 March, 1857.

It shall not be lawful for any person or persons to import or introduce gunpowder within the following limits, excepting as hereinafter directed; that is to say, no vessel having a greater quantity than five kegs of gunpowder shall be permitted to anchor north of the pier next above the Pointhouse, on the river Delaware, in the township of Moyamensing and county of Philadelphia.

Ibid. § 6.

Gunpowder isken  
through or near  
Philadelphia to be  
secured in bags.

**359.** No person shall convey in any dray, cart, wagon, or other carriage, any greater quantity of gunpowder than thirty pounds weight, in or through the said city, or the adjacent country, within two miles of said city, without securing it in a good bag or bags, or putting a sheet of canvas under and around the said powder, sufficient to prevent the same from scattering from the said carriage, under the penalty of forfeiture of the said gunpowder, and, for every such offense, the sum of twenty pounds, to be paid by every person so offending.

Under this act musket and cannon cartridges are liable to seizure if conveyed through the streets of Philadelphia without being secured as the act directs; but they cannot be seized after being lodged in the magazine.—*Shewell v. Gunpowder*, 1 Bro. 116. The omission of the shipper of a dangerous article (*aquafortis*) to give notice of its nature to the carrier, is an act of negligence, which renders the shipper liable for the consequences.—*Stacey v. Wetherill*, 7 Haz. Pa. Reg. 92.

14. March 1818, § 1.  
7 Sm. 83.  
B. P. D. 729.

Where gunpowder  
may be landed.

**360.** It shall not be lawful for any person or persons to import or introduce gunpowder within the following limits, excepting as hereinafter directed; that is to say, no vessel having a greater quantity than five kegs of gunpowder shall be permitted to anchor north of the pier next above the Pointhouse, on the river Delaware, in the township of Moyamensing and county of Philadelphia, and all gunpowder brought up the Delaware shall be landed at the aforesaid pier, and when the same is intended to be conveyed to the United States arsenal or the state magazine, the same shall be transported by the most convenient route not approaching nearer to the city than as follows.† \* \* \* \*

Ibid. § 5.  
7 Sm. 83.  
B. P. D. 730.

**361.** No greater quantity of gunpowder than three kegs, containing twenty-five pounds each, shall be landed from or shipped on board any vessel lying in the river Delaware, between the before mentioned pier and Conoroë & Co.'s wharf aforesaid.

† The remainder of this section and the second, third and fourth sections prescribe the route for the transportation of gunpowder through the city.

**362.** For the purpose of supplying retailers of gunpowder within the city of Philadelphia, or within the limits hereinafter marked out and prescribed, it shall and may be lawful to introduce the same in kegs, containing twenty-five pounds each, made and secured as directed by the act to which this is a supplement,\* carefully enclosed in sound, strong woolen or leather bags, and laid in a close-bodied carriage, covered with painted canvas.

14 March, 1818, § 6.

**363.** No gun-cotton shall be introduced into Philadelphia, nor placed in storage therein, in greater bulk or quantity in any one place, than is permitted by existing laws with regard to gunpowder; and all the pains, penalties and forfeitures imposed by an act entitled "An act for securing the city of Philadelphia, and the neighborhood thereof, from damage by gunpowder," passed on the 28th day of March, 1787, and a supplement thereto, passed on the 14th day of March, 1818, shall apply and be extended to gun-cotton, in the same manner and with the same effect as if the word gun-cotton were inserted in the said act.

16 March, 1847, § 1.  
P. L. 473.  
W. D. 463.

Gun-cotton placed under same regulations as gunpowder.

**364.** It shall and may be lawful for any one to introduce into the city and county of Philadelphia, from the state powder magazine, in any one carriage at any one time, any number of kegs of gunpowder not exceeding fifteen of said kegs, to be immediately distributed for the supply of retailers. (The act of March 14, 1818, § 7, prescribes the penalty.)

11 April, 1848, § 9.  
P. L. 506.  
B. P. D. 730

Not more than fifteen kegs of gunpowder to be taken into Philadelphia in one load.

**365.** It shall be unlawful for any person to transport gunpowder over any railroad, canal or slack-water in this commonwealth, unless the keg, barrel or other vessel containing the same shall be distinctly and conspicuously marked, by having the word "gunpowder" written or printed thereon; and every violation of this section shall subject the person or persons so offending to be prosecuted by indictment in the court of quarter sessions of the proper county, and punished by fine not exceeding five hundred dollars, and imprisonment not exceeding six months, or either of them, at the discretion of the court. See 23 May, 1878, § 1, P. L. 102, *infra*.

22 April, 1850, § 9.  
P. L. 539.  
P. D. 1440

Gunpowder not to be transported unless so marked.

**366.** Every borough within this commonwealth shall have power (vested in the corporate officers designated in the charter) to prohibit within the borough the carrying on of any manufacture, art, trade or business which

3 April, 1851, § 2.  
P. L. 320.  
P. D. 201.

Powers of boroughs in regulating manufacture and sale of explosives.

\*Act 28 March, 1787, § 6, above, 359.



§ April, 1851.

20 March, 1856, § 1.  
P. L. 127.  
P. D. 863.

Storage of gunpow-  
der, etc., in Phila-  
delphia regulated.

Ibid, § 2.

Mayor to grant  
licenses.

Not more than  
twenty-five pounds  
to be kept

Sign of "licensed  
to sell gunpowder,"  
to be put up.

Price of licer

Ibid, § 3.

Carriages for con-  
veyance of, to be  
marked "gunpow-  
der."

Ibid, § 4.

On violation sub-  
ject to seizure.

may be noxious or offensive to the inhabitants; the manufacture, sale or exposure of fire-works or other inflammable or dangerous articles, and to limit and prescribe the quantities that may be kept in one place of gunpowder, fire-works, turpentine and other inflammable articles, and to prescribe such other safeguards as may be necessary.

**367.** It shall not be lawful for any person or persons to have or keep any quantity of gunpowder or gun-cotton in any house, store, shop, building, cellar or other place within the city of Philadelphia (except in the public magazines, or in a quantity not exceeding two pounds for private use), unless in the manner hereinafter provided.

**368.** It shall be lawful for the mayor of the city of Philadelphia to grant licenses, under the official seal of said city, to any person or persons desirous to sell gunpowder or gun-cotton therein. The person or persons so licensed may have on their premises a quantity of gunpowder or cotton not exceeding in all twenty-five pounds at any one time. The person or persons so licensed shall not be protected against any of the penalties or consequences hereinafter provided for violations of this act, except while they have, on some conspicuous part of the front of each of the houses or buildings in which they may be licensed to sell gunpowder or gun-cotton under this act, a sign on which shall be distinctly painted in letters legible to persons passing such houses or buildings, the words, "licensed to sell gunpowder," or "licensed to sell gun-cotton," and shall pay into the city treasury the sum of five dollars for said license.

**369.** Every carriage used for conveying gunpowder or gun-cotton within the city of Philadelphia, in accordance with the provisions of the acts now in force relative thereto, shall, in addition to the requirements therein contained, have painted on each side thereof, in letters distinctly legible to all passers-by, the word "gunpowder," and any failure so to do shall subject the offender or offenders to the penalties herein contained for violations of this act.

**370.** In every case of a violation of any provision of this act, relative to the keeping of gunpowder or gun-cotton, or in every case of the violation of any of the provisions of the acts now in force relative to the introduction into the city of Philadelphia of gunpowder or

gun-cotton, it shall be lawful for any of the trustees of the Philadelphia Association for the Relief of Disabled Firemen, to seize such gunpowder or gun-cotton, in the daytime, and to convey, or cause the same to be conveyed, to any magazine used for the storing of gunpowder.

20 March, 1856.

371. Whenever any inhabitant of the said city shall make oath or affirmation, particularly describing as nearly as may be the place to be searched, and the things to be seized, before the mayor or any alderman, of any fact or circumstance, which, in the opinion of the said mayor or alderman, shall afford a probable cause of belief that any gunpowder or gun-cotton has been brought into, or is kept within the said city, or in the harbor thereof, contrary to the provisions of this act, or any of the provisions of the acts now in force relative to the introduction of gunpowder or gun-cotton into the city of Philadelphia, it shall be lawful for the said mayor or alderman to issue his warrant or warrants, under his hand and seal, to any sheriff, marshal, constable, or other fit person, commanding him or them to search for such gunpowder or gun-cotton, in the daytime, wheresoever the same may be in violation of said acts, and to seize and take possession of the same, if found, and to convey, or cause the same to be conveyed, forthwith, to any magazine used for storing gunpowder.

Ibid, § 5.

When search warrants may be issued.

372. All actions or suits for the recovery of any gunpowder or gun-cotton, which may have been seized and stored in any magazine by virtue of the provisions of this act, or for the value thereof, or for damages sustained by the seizure or detention thereof, shall be brought against the Philadelphia Association for the Relief of Disabled Firemen, and shall be commenced within three calendar months next after such seizure shall have been actually made, and in case no such action or suit shall have been commenced within such period, such gunpowder or gun-cotton shall be deemed absolutely forfeited to the said Philadelphia Association for the Relief of Disabled Firemen, and may be immediately delivered to the proper officers thereof for its use. No penal damages shall be recovered in any such action or suit; and such gunpowder or gun-cotton may, at any time during the pendency of any such action or suit, by consent of the parties thereto, be sold, and the money arising from such sale be paid into the court where such suit or action may be pending, to abide the event thereof.

Ibid, § 6.

How suits to be brought by owners

When gunpowder to be forfeited.

20 March, 1856, § 7.

When firemen may  
seize without war-  
rant.

Ibid. § 8.

Penalty for viola-  
tions of this act.

How recoverable.

Ibid. § 9.  
P. D. 364.

Extended to salt-  
petre.

Ibid. § 10.

Limitation of suits  
for penalties.

**373.** If any gunpowder or gun-cotton, exceeding the quantity mentioned in this act, shall be found in the possession or custody of any person or persons, in violation of the provisions herein contained, by any fireman of any company belonging to the fire department of the said city during any fire therein, it shall be lawful for such fireman to seize the same, without any warrant, and to immediately convey the same, and report such seizure to the chief engineer of the fire department, or in his absence the acting assistant engineer; and the said chief engineer or assistant shall convey, or cause it to be conveyed, to any magazine for the storing of gunpowder, there to be detained until it be decided by due course of law, in accordance with the provisions of this act, whether such gunpowder or gun-cotton be forfeited.

**374.** Any violation of the provisions of this act relative to the keeping of gunpowder or gun-cotton, or of any of the provisions of the acts now in force relative to the introduction of gunpowder or gun-cotton into the city of Philadelphia, shall, in addition to the forfeiture of the gunpowder or gun-cotton as hereinbefore provided, also subject the offender or offenders to a fine of five hundred dollars for each offense, to be recovered, with costs of suit, in an action of debt in any court having cognizance thereof, by, to and for the use of the Philadelphia Association for the Relief of Disabled Firemen. And all gunpowder or gun-cotton found within the city of Philadelphia in violation of the provisions in this act contained, shall be forfeited to the use of the aforesaid Philadelphia Association for the Relief of Disabled Firemen.

**375.** All and singular the provisions of this act relative to the recovery of any penalty, and the seizure and forfeiture of gunpowder or gun-cotton, be and they are hereby extended to the recovery of any penalty, and the seizure and forfeiture of all saltpetre introduced, stored, deposited or kept in said city, in violation of the acts relative thereto, now in force in said city; and the said penalty and forfeiture shall be to and for the use of the aforesaid Philadelphia Association for the Relief of Disabled Firemen, against whom all suits or actions for its recovery shall be brought, in accordance with the provisions of this act.

**376.** All actions for any penalty incurred for violation of any of the provisions of this act, or of any of the acts now in force relative to the introducing, keeping, storing

or depositing of gunpowder, gun-cotton or saltpetre within the city of Philadelphia, shall be commenced within one year next after incurring such penalty.\*

The erection of a powder magazine, in an improving neighborhood, though not within half a mile of the buildings then erected, is a nuisance.—Weir's Appeal, 74 Penn. St. 230. Under what circumstances the erection and maintenance of a powder magazine will not be enjoined; the use of gunpowder is an indispensable necessity in many branches of business.—Dilworth's Appeal, 91 Penn. St. 247.

### Nitro-Glycerine.

**377.** If any person shall enter into or upon any railroad train, locomotive, tender or car thereof, or into or upon any stage-coach, or other conveyance used for the carrying of freight or passengers, having in his custody, or about his person, any nitro-glycerine or torpedo, or shall carry or cause to be carried, other than as freight regularly shipped as such, such substance, material or device, upon such train, locomotive, tender, car, coach or other conveyance, such person shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be sentenced to pay a fine not exceeding five hundred dollars, and to undergo an imprisonment not exceeding three months, or either, in the discretion of the court.

**378.** The conductor or persons having charge and control of any railroad train, coach or other conveyance for the carriage of freight or passengers, shall have power to arrest any party or parties, or person or persons, found violating the provisions of the first section hereof, and to detain such party or person until reaching some place where such person or persons may be delivered to a constable or other police authority, to be taken before any magistrate having jurisdiction of criminal matters, there to be proceeded against by information, as in other criminal cases; and it shall be lawful to prosecute such offenders in any county through which said public conveyance passes, without reference to the place where such offenders were arrested.

\*The act 5 May, 1864, § 1, P. L. 841, fixes the rates to be paid for storing all powder or fixed ammunition in the state powder magazine at Philadelphia.

20 March, 1856.

23 May, 1878, § 1.  
P. L. 102.  
P. D. 423.

oid, § 2.

Powers of conductor, etc., to arrest.

Offenders may be prosecuted in any county through which conveyance passes.



### Firearms and Fireworks.

24 August, 1721, § 4.  
1 Sm. 129.

B. P. D. 725.

Regulation of use  
and sale of firearms  
and fireworks.

**379.** If any person or persons, of what sex, age, degree, or quality soever, from and after publication hereof, shall fire any gun or other firearms, or shall make or cause to be made, or sell or utter, or offer or expose to sale, any squibs, rockets, or other fireworks, or shall cast, throw or fire any squibs, rockets or other fireworks, within the city of Philadelphia, without the Governor's special license for the same, of which license due notice shall first be given to the mayor of said city, such person or persons so offending, and being thereof convicted before any one justice of the peace of the said city, either by confession of the party so offending, or by the view of any of the said justices, or by the oath or affirmation of one or more witnesses, shall, for every such offense, forfeit and pay the sum of five shillings; one-half to the use of the poor of the said city, and the other half to the use of him or them who shall prosecute and cause such offender to be as aforesaid convicted; which forfeitures shall be levied by distress and sale of the offender's goods as aforesaid; and for want of such distress, if the offender refuse to pay the said forfeiture, he shall be committed to prison for every such offense the space of two days without bail or mainprise: *Provided*, That such conviction be made within ten days after such offense committed.

This act is not obsolete.—*Homer v. Cwlth.*, 15 W. N. C. 337. It was held not to have been violated by the firing of a cannon on the 4th of July.—*Eiffenbaugh v. Agnew*, 12 Haz. Pa. Reg. 247.

24 Dec., 1774, § 1.  
1 Sm. 421.

P. D. 815.

Wanton discharge  
of firearms or fire-  
works on or about  
January 1, pro-  
hibited.

**380.** If any person or persons shall on the thirty-first day of December, or the first or second day of January, in every year, wantonly, and without reasonable occasion, discharge and fire off any hand-gun, pistol or other firearms, or shall cast, throw, or fire any squibs, rockets, or other fireworks, within the inhabited parts of this province, to the disturbance of any of his majesty's subjects there inhabiting and being, every such person so offending and being thereof convicted before any one justice of the peace of the county, or mayor or other head officer, or justice of the peace of any city or town corporate, where such offense shall be committed, either by confession of the party so offending, or the oath or affirmation of one or more credible witnesses (which oath or affirma-

tion the said justice or other officer aforesaid is hereby empowered and required to administer), shall, for every such offense, forfeit for the use of the poor of the township or district where such offender lives, the sum of ten shillings, to be levied by distress and sale of the offender's goods and chattels, by warrant, under the hand and seal of the justice or other officer before whom such offenders shall be convicted, returning the overplus, if any, to the owner, the reasonable charge of distraining being first deducted; and for want of such distress such offender shall be committed to prison for the space of five days, without bail or mainprise.

24 December 1774.  
Penalty.

Fine of ten shillings or imprisonment.

**381.** If any person or persons shall willingly permit or suffer, within the time aforesaid, any person or persons to discharge or fire off at his or her house any hand-gun, pistol or other firearms, or to cast, throw or fire any squibs, rockets or other fireworks as aforesaid, every person so as aforesaid offending, and being thereof convicted in manner aforesaid, shall, for every such offense, forfeit and pay, for the use aforesaid, the sum of twenty shillings, to be recovered in manner aforesaid.

*Ibid.*, § 2.

Persons not to permit others to violate the act at their houses.

**382.** The constable of each respective city, borough, township, or place in every county of this province, having any knowledge of any offenses against this act, shall, and he is hereby required, under the penalty of twenty shillings, to present on oath or affirmation every such offense to one of the next justices of the peace of their respective counties, or before the justices of the general quarter sessions of the peace for the said county, together with the name or names of all such offenders, that they may be tried agreeably to the directions of this act.

*Ibid.*, § 3.

Duty of constable.

**383.** If any person shall conceive him or herself aggrieved by the judgment of any such justice, he or she may appeal to the next county court of quarter sessions of the said county, who shall, on the petition of the party, take such order therein as to them shall appear just and reasonable, and the same shall be conclusive to all parties.

*Ibid.*, § 4.

Right of appeal to county court.

**384.** No person or persons shall be prosecuted or troubled for an offense against this act, unless the same be prosecuted within four months after the offense committed.

*Ibid.* § 5.

Prosecution must be within four months.

An ordinance prohibiting the firing of guns within a municipality is not violated by a firing for the protection of life, person or property.—*Lancaster v. Baer*, 5 Lancaster Bar, 6 Dec., 1873.

23 March, 1865.  
P. L. 744.  
B. P. D. 725.

**385.** It shall not be lawful for any person, or association, or corporation to manufacture any species of pyrotechnic, or fireworks, cartridges, nor any kind of fixed ammunition in the built-up portion of the city of Philadelphia.

12 March, 1866, § 1.  
P. L. 160.  
P. D. 864.

Penalty.

How recoverable.

**386.** Any violation of the provisions of an act approved the 16th day of February, A. D. 1865, entitled "An act relative to the manufacture of fireworks in the city of Philadelphia," shall subject the offender or offenders to a fine of fifty dollars for each offense, to be recovered, with costs of suit, in an action of debt, before any magistrate, or in any court having cognizance thereof, by, to and for the use of the Philadelphia Association for the Relief of Disabled Firemen.

10 June, 1881, § 1.  
P. L. 111.  
P. D. 423.

Sale of toy deadly weapons and explosives to children.

**387.** Any person who shall knowingly and wilfully sell, or cause to be sold, to any person under sixteen years of age, any cannon, revolver, pistol or other such deadly weapon, or who shall knowingly and wilfully sell or cause to be sold, to any such minor, any imitation or toy cannon, revolver or pistol so made, constructed or arranged as to be capable of being loaded with gunpowder, or other explosive substance, cartridges, shot, slugs or balls, and being exploded, fired off and discharged, and thereby become a dangerous or deadly weapon, or who shall knowingly and wilfully sell or cause to be sold to any such minor any cartridge, gunpowder or other dangerous and explosive substance, shall, in every such case, be guilty of a misdemeanor, and upon conviction thereof shall be sentenced to pay a fine not exceeding three hundred dollars.

11 June, 1885, § 1.  
P. L. 111.  
P. D. 2210.

Manufacture and sale of toy deadly weapons declared a misdemeanor.

Penalty for violation of act.

**388.** Any person or persons who shall knowingly and wilfully make, manufacture and sell, or cause to be made, manufactured or sold, any toy cannon, gun, pistol, revolver or other such deadly weapon, or who shall knowingly or wilfully expose to sale any such weapon made elsewhere and brought within the state, shall be guilty of a misdemeanor, and upon conviction thereof, shall be sentenced to pay a fine not exceeding five hundred dollars, or suffer imprisonment for a term not exceeding one year, or both, or either, at the discretion of the court: *Provided*, This act shall not interfere with the manufacture and sale of legitimate firearms.

## XVI. HEALTH AND SAFETY OF EMPLOYEES AND CHILDREN.

### Fire-Escapes.

**389.** All the following-described buildings within this commonwealth, to-wit: Every building used as a seminary, college, academy, hospital, asylum, or hotel for the accommodation of the public, every storehouse, factory, manufactory or workshop of any kind in which employées or operatives are usually employed at work in the third or any higher story, every tenement house or building in which rooms or floors are usually let to lodgers or families, every public hall or place of amusement, every parochial or public school building, when any of such buildings are three or more stories in height, shall be provided with a permanent safe external means of escape therefrom, in case of fire, independent of all internal stairways: the number and location of such escapes to be governed by the size of the building, and the number of its inmates, and arranged in such a way as to make them readily accessible, safe and adequate for the escape of said inmates. Such escapes to consist of outside open iron stairway, of not more than forty-five degrees slant, with steps not less than six inches in width and twenty-four inches in length. And all of said buildings capable of accommodating from one hundred to five hundred or more persons as operatives, guests or inmates, shall be provided with two such stairways, and more than two stairways, if such be necessary to secure the speedy and safe escape of said inmates, in case the internal stairways are cut off by fire or smoke. And it shall be the duty of the owner or owners in fee or for life, of every such building, and of the trustee or trustees of every estate, association, society, college, seminary, academy, hospital, or asylum, owning or using any such building, and of the board of education or board of school directors having charge of any such school building, to provide and cause to be securely affixed outside of every such building such permanent external unenclosed fire-escape: *Provided*, That nothing herein contained shall prohibit any person whose duty it is under this act to erect fire-escapes, from selecting and erecting any other and different device, design or instrument, being a permanent safe external means of

3 June, 1885, § 1.

Fire-escapes.  
P. L. 63.  
P. D. 2208.

Number and location to be determined by size of building and number of inmates.

Description of

Certain buildings to have two or more such escapes.

Duty of owners, trustees, etc., to provide and cause to be securely affixed such escapes.

Any escape approved by the proper authorities, may be adopted in place of those designated.



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escape, subject to the inspection and approval of the constituted authorities for that purpose.

This act is an amendment of the act of 11 June, 1879, P. L. 128.

Ibid. § 2.

Examination and approval of fire-escapes by fire commissioners and marshal.

If approved, certificate to be granted.

Effect of certificate of approval.

County commissioners to be board of examiners in certain counties.

Neglect or refusal to comply with act declared a misdemeanor, punishable by fine or imprisonment or both.

Liability for damages sustained by neglect or refusal to provide proper fire-escapes.

Criminal liability.

Penalty.

By whom such action may be maintained.

This act not to interfere with approved escapes now in use.

**390.** It shall be the duty of the board of fire commissioners in conjunction with the fire marshal of the district where such commissioners and fire marshal are elected or appointed, to first examine and test such fire-escape or escapes, and, after upon trial, said fire-escape, or escapes should prove to be in accordance with the requirements of section one of this act, then the said fire marshal, in connection with the fire commissioners, or a majority of them, shall grant a certificate approving said fire-escape, thereby relieving the party or parties to whom such certificate is issued from the liability of fines, damages and imprisonment imposed by this act: *Provided further*, That in counties where no such fire marshal or fire commissioners exist then the county commissioners in each said county shall be the board of examiners, and shall grant certificates of approval when escapes are erected in accordance with the requirements of section one of this act. \* \* \* \*

**391.** Every person, corporation, trustee, board of education and board of school directors neglecting or refusing to comply with the requirements of section one of this act, in erecting said fire escape or escapes, shall be liable to a fine not exceeding three hundred dollars, and also be deemed guilty of a misdemeanor punishable by imprisonment for not less than one month or more than two months. And in case of fire occurring in any of said buildings, in the absence of such fire-escape or escapes approved by certificate of said officials, the said person or corporations shall be liable in an action for damages in case of death or personal injuries sustained in consequence of such fire breaking out in said building, and shall also be deemed guilty of a misdemeanor punishable by imprisonment for not less than six months nor more than twelve months; and such action for damages may be maintained by any person now authorized by law to sue as in other cases of similar injuries: *Provided*, That nothing in this act shall interfere with fire-escapes now in use approved by the proper authorities.

It will be observed that this act, and also the following one, imposes the duty of erecting fire-escapes upon the owner in fee or for life of the property. Under the act of 11 June, 1879, P. L. 128, it had been decided that the "owner" is the person having posses-

sion and control of the building, and that a tenant in possession under a lease from the owner, is liable, and not the landlord.—*Schott v. Harvey*, 105 Penn. St. 222; *Keeley v. O'Connor*, 106 Penn. St. 321. The means of escape provided are not required to be the very safest that can be devised; but they must be such as are safe in the judgment of ordinarily prudent men. A defendant who has built such an escape cannot be held responsible if the fire originated in that part of the building where it was located, and thus cut off access to it.—*Keeley v. O'Conner*, above.

**392.** In addition to the means of escape required in section one of the act to which this is a supplement, it shall be the duty of the owner or owners, in fee or for life, of every building constructed more than two stories high and used or intended to be used as a hotel, factory, manufactory, workshop, tenement house, school, seminary, college, academy, hospital, asylum, hall or place of amusement, and of the trustee or trustees of every estate, association, society, college, academy, hospital or asylum, owning or using any building constructed more than two stories high, and used or intended to be used for any of said purposes, and of the board of education, or board of school directors, having charge of any building constructed more than two stories high, and used or intended to be used as a public school, to provide and cause to be securely affixed to a bolt through the wall over the window inside of at least one window, in each room, on the third floor, and in each room on each higher floor of every such building, a chain at least ten feet in length with a rope at least one inch in diameter securely attached thereto of sufficient length to extend to the ground, or such other appliance as may be approved by the board of fire commissioners of any city or county having a board of fire commissioners, or by the county commissioners of any county where there is no board of fire commissioners: *Provided, however*, That when the third floor, or any higher floor, of any such building is not sub-divided into rooms then at least six windows on each of such floors shall be provided with such chains and ropes, or such other appliances as may be approved by any board of fire commissioners, or by the county commissioners of any county where no board of fire commissioners shall exist: *And provided further*, That whenever any room on the third floor, or on any higher floor of any such building shall contain more than three windows,

3 June, 1885.

*Ibid.*, \* § 1.  
P. L. 65.  
P. D. 2207

Fire-escapes consisting of chain and rope fastened to windows.

How affixed.

Description of chain and rope.

To be approved by fire, or county commissioners.

At least six windows on the third or any higher floor to be so provided.

Rooms with more than three windows shall have one out of three so provided.

\*This act is an amendment of the act of 1 June, 1883, P. L. 56, P. D. 814, which was supplementary to that of 11 June, 1879, P. L. 128, P. D. 813.

3 June, 1885.

How and where  
ropes to be kept.

All buildings as  
aforesaid to be  
properly lighted at  
night.

Alarms and gongs  
to be kept ready for  
use.

Notices descriptive  
of escapes to be  
posted in each  
sleeping room.

Commissioners may  
fix location of  
escapes, &c., and  
grant certificates of  
approval thereof.

Ibid. § 2.

Neglect to comply  
with act a misde-  
meanor.

Penalty.

then at least one window out of every three windows, in every such room shall be provided with such chain and rope or such other appliance as may be approved by any board of fire commissioners, or by the county commissioners of any county having no board of fire commissioners. And each of such ropes shall be coiled and kept in an unlocked box in an unobstructed place, near the inside sill of the window to which such rope is attached. And in all hotels, factories, manufactories, workshops, schools, seminaries, colleges, hospitals, asylums, halls or places of amusement, or other places mentioned in this act, the hallways and stairways shall be properly lighted at night, and at the head and foot of each flight of stairs, and at the intersection of all hallways with main corridors, shall be kept during the night a red light; and one or more proper alarms or gongs capable of being heard throughout the building shall always remain easy of access and ready for use in each said building to give notice to the inmates in case of fire. And every keeper of such hotel, factory, manufactory, workshop, school, seminary, college, hospital, asylum, hall or place of amusement, shall keep posted in a conspicuous place in every sleeping room a notice descriptive of such means of escape. And the board of fire commissioners and county commissioners of any county having no board of fire commissioners, shall have the right to designate the location of the chains and ropes or such other appliances in conformity with this act to be attached to any building under the provisions of this act, and shall grant certificates of approval to every person, firm, corporation, trustee, board of education and board of school directors, complying with the requirements of this act, which certificates shall relieve the party or parties to whom the same shall be issued from the liabilities, fines, damages and imprisonment imposed by this act.

**393.** Every person, corporation, trustee, board of education and board of school directors, neglecting or refusing to comply with the requirements of the first section of this act, shall be liable to a fine not exceeding three hundred dollars, to be collected as fines are now by law collectible, and shall also be deemed guilty of a misdemeanor, punishable by imprisonment for not less than one month, nor more than twelve months. And in case of fire occurring in any such building not provided with chains and ropes, or such other appliances as may be re-

quired by any board of fire commissioners, or by the county commissioners of any county where no board of fire commissioners shall exist, in accordance with the requirements with the first section of this act, the person, persons, trustee, trustees, corporation, board of education or board of school directors, who or which neglected or refused to provide such building with the chains and ropes, or such other appliances as aforesaid, shall be liable in an action for damages in case of death or personal injury being caused in consequence of such fire breaking out in said building, and such action may be maintained by any person or persons now authorized by law to sue in other cases for injuries caused by neglect of duty.

3 June 1885

Liability for injuries resulting from neglect of provisions of the act

### Female Employees.\*

394. Every person, firm, association, individual, partnership or corporation employing female employes in any manufacturing, mechanical or mercantile establishment in this state, shall provide suitable seats for the use of the female employes so employed, and shall permit the use of such, by them, when they are not necessarily engaged in the active duties for which they are employed.

22 March, 1887, § 1.  
P. L. 7.  
P. D. 2206.

Suitable seats for female employes to be provided.

And used by them.

395. Any person, firm, association, individual, partnership or corporation violating any of the provisions of this act, shall, upon conviction thereof before any magistrate, alderman or justice of the peace, be sentenced to pay a fine of not less than twenty-five, nor more than fifty dollars, to be paid into the treasury of the proper county, and costs for each offense, and any failure to pay the same shall be committed to the proper jail until discharged according to law.

Ibid, § 2.

Penalty.

Appropriation of penalties.

Imprisonment in default of payment.

### Employment of Children.\*

396. It shall be unlawful for any person, persons, firms, companies, associations or corporations, to employ any child under the age of twelve years to do any work in or about any mill, manufactory or mine in this commonwealth.

1 June, 1887, § 1.  
P. L. 287  
P. D. 2218.

Employment of children under 12 years of age, at any mill, manufactory or mine prohibited.

397. Any person, persons, or corporations who may violate this act, shall, on conviction, pay a fine of not less than twenty dollars nor more than one hundred dollars,

Ibid, § 2.

Penalty

\*See 414, 441, acts 30 June, 1885, as to employment of females and boys in coal mines.



at the discretion of the court. Said fines, arising from the violation of this act, shall be paid to the treasury of the proper county, where said violation shall occur.

28 May, 1885, § 2.  
P. L. 27,  
P. D. 2218.

Boarding of young  
infants regulated.

Any person, other than an institution duly incorporated for the purpose, who shall engage in the business of receiving, boarding or keeping infant children under the age of three years, for hire or reward, who shall receive or take for such purpose more than two such children without legal commitment, or without having first obtained a license in writing so to do from the mayor of the town or a justice of the peace or magistrate of the locality wherein such child is to be received, boarded or kept, shall be guilty of a misdemeanor, and upon conviction thereof, shall be sentenced to pay a fine not exceeding one hundred dollars.

Violation of this  
section deemed a  
misdemeanor.

Ibid, § 3.

Mayor or justice of  
the peace may issue  
license to engage  
in the business of  
boarding and keep-  
ing such infants.

It shall and may be lawful for the mayor of any city or town, or any justice of the peace or magistrate of the locality, within which any child is to be received, boarded or kept as specified in section two, at his discretion, to issue a license to any person applying therefor for the purposes specified in section two of this act, upon the payment of a fee of one dollar for the use of the county, which license shall be revocable at all times by the court of quarter session or any judge thereof upon cause shown. It shall be lawful for any member or officer of the state board of charities, or the board of health of the locality wherein such license is issued, or any duly authorized officer of any incorporated society for the protection of children from cruelty, at all reasonable times, to enter and inspect the premises wherein any such children are boarded, received or kept.

Board of public  
charities, or of  
health, may enter  
and inspect prem-  
ises.

### Health and Safety of Miners.

Sundry mining  
laws now embodied  
in acts of 30 June,  
1885, P. L. 205, 218.

**398.** [The health and safety of persons employed in and about coal mines has been the subject of considerable legislation in Pennsylvania, the most important act previous to those of 1885, being that of 3d March, 1870, P. L. 3, P. D. 1177. Other acts were those of 22d April, 1870, P. L. 1256, P. D. 1182, for Mercer county only; 5 April, 1870, P. L. 50, P. D. 1190; 18 April, 1877, P. L. 56, P. D. 1179; 10 May, 1881, P. L. 17, P. D. 1183; 1 June, 1883, P. L. 55, P. D. 1184. The acts, 30 June, 1885, P. L. 205, relating to bituminous and 30 June, 1885, P. L. 218, set forth below, **399**, relating to anthracite mines, are extremely full and elaborate in detail, and re-

peal all previous laws inconsistent with or supplied thereby. While too voluminous to be introduced here without condensation, the leading features are presented, and many sections are set forth without change.]

### Bituminous Mines.

**399.** The owner, operator or superintendent of every bituminous coal mine, shall make \* \* \* \* an accurate map or plan of such coal mine, on a scale not exceeding one hundred feet to the inch, which \* \* \* \* shall exhibit all the openings or excavations, the shaft, tunnels, \* \* \* \* gangways, \* \* \* \* *et cetera*, and shall show the direction of the air currents therein, and shall accurately delineate the boundary lines between said coal mine and adjoining mines operated by other parties, and show the relation and proximity of the workings thereto. The maps shall also show the changes of level of the lowest entry in use for drainage connecting with each independent opening. The said map or plan, or a true copy thereof, together with a record of all the surveys of said boundary lines and openings and excavations aforesaid, shall be kept at such mine \* \* \* \* for the use of the mine inspector, and for the inspection of any miner working in said mine, \* \* \* \* . The said owner, operator or superintendent shall, as often as once in every six months, accurately place \* \* \* \* on the map of said \* \* \* \* mine, a plan of the excavations made of all other parts of such coal mine, during the preceding six months; and, whenever the workings or excavations of said coal mine, or any part of the same have been driven to within ten feet of the boundary line, or when said coal mine, or any part of the same, is abandoned, the owner, operator or superintendent thereof shall furnish the mine inspector within three months after, the proximity to the boundary line as aforesaid, or after abandonment of the said mine, or any part of the same, with a correct copy, on tracing muslin, of the map or plan of said mine, which shall accurately show all excavations and workings of such mine to date, exhibiting clearly the part or parts abandoned, and the part or parts in proximity to the boundary line aforesaid. The maps or plans of the several coal mines in each district, which are furnished to mine inspector as last aforesaid, shall be the property of the commonwealth, and shall remain in the care of the inspector of the district in which the said

30 June, 1885, § 1.  
P. L. 205.  
P. D. 2243.

Maps or plans of mines to be made by the owners, etc.

Maps shall show openings, etc.

Changes of level.

Map or copy, shall be kept at mine for inspection

Progress of work shall be accurately noted on map once in every six months

Proximity to boundary lines, or abandonment of mine to be traced on a map and furnished to the inspector within three months thereafter.

Maps or plans to be property of the commonwealth, and be in custody of the inspector.

And be transferred to his successor  
Copies not to be made without consent of owner.

30 June 1885. § 2.

Two openings to be made to each mine.

Description of openings when mine is worked by shaft or slope.

When mine is worked by drift.

Not more than twenty persons to be employed in mine until second opening is made.

Location, etc., of furnace, when furnace ventilation is used.

mines are situated, to be transferred by him to his successor in office, and in no case shall any copy of the same be made without the consent of the owner, operator or his agent.

**400.** It shall not be lawful for the owner, operator, contractor, lessee or agent of any bituminous coal mine, or for any firm, company, corporation or association, their clerks, servants, agents or employes, to employ any person at work within said coal mine, or permit any person to be in said coal mine, for the purpose of working therein, unless they are in communication with at least two openings, if the mine be worked by shaft or slope,\* which two shafts or slopes shall be separated by natural strata at all points by a distance of not less than one hundred and fifty feet, except in mines already opened, such distance may be less, if in the judgment of the mine inspector one hundred and fifty feet is impracticable; and if the mine be worked by drift, two openings, exclusive of the air shaft, and not less than twenty-four feet apart, shall be required, except in drift mines heretofore opened, where the mine inspector of the district shall deem it impracticable: *Provided however*, That an aggregate number, not exceeding twenty persons, may be employed in the mine at any one time until the second opening shall be reached and made available, which said second opening, the mine inspector shall cause to be made without necessary delay; and, in case of furnace ventilation being used before the second opening is reached, the furnace shall not be placed within forty feet of the foot of the shaft, slope or drift, and shall be well secured, from danger from fire, by brick or stone walls of sufficient thickness, while being driven for making and perfecting the second opening.†

\*This does not embrace a coal mine operated through a tunnel. Cwlt. v. Connell, 2 Luz. Leg. Reg. 1.

† Where, in connection with a mine or colliery, a shaft has been sunk to, or a slope driven in a seam or *stratum* of coal which is in communication with a second outlet at the point where the mining is carried on, and a field of coal has there been exhausted; yet, if from that point, a slope be continued on following the pitch of the seam or *stratum* down several hundred feet, and at the bottom thereof extensive mining be carried on in the same, and there is no second outlet communicating therewith, separated from such slope by natural strata of at least one hundred and fifty feet in breadth, the mine or colliery is within the legislative inhibition; and an injunction will be granted to restrain the owners, lessees or occupiers thereof from thus working the same. Cwlt. v. Wilkes-

401. When the second opening or outlet is made which does not exceed seventy-five feet in vertical depth from the surface to the seam or stratum of coal that is being mined, it shall be set apart exclusively for the purpose of ingress or egress to or from the mine by \* \* \* \* persons employed therein, and it shall not be clogged or obstructed with ice, machinery, pumps, or currents of heated air or steam; and if the opening is a shaft, it shall be fitted with safe and convenient stairs, \* \* \* \* and all water coming from the surface or out of the strata in the shaft shall be conducted by rings, casing or otherwise, and be prevented from so falling down the shaft as to wet persons who are ascending or descending the stairway of the shaft. \* \* \* \* When the seam or stratum of coal, at main outlet or escapement shaft in connection with any mine, exceeds seventy-five feet in vertical depth from the surface, the employes in the mine shall be lowered into or raised from the said mine by machinery. \* \* \* \* The hoisting machinery and stairs used for lowering or raising the employes into or out of the mine shall be kept in a safe condition, and inspected once each twenty-four hours by a competent person employed in whole or in part for that purpose. \* \* \* \* The owner, operator, lessee or agent shall provide and maintain a metal speaking tube from the top to the bottom of the shaft, \* \* \* \* also the ordinary means of signaling to and from the top

30 June, 1885, § 3.

Second opening to be used exclusively for purpose of ingress or egress.

Not to be obstructed.

How to be fitted when opening is a shaft.

When opening is a slope for a traveling way.

When seam at main outlet is more than seventy-five feet in vertical depth from the surface.

Hoisting machinery to be kept in a safe condition, and inspected daily.

Speaking tubes.

Means of signaling.

barre Coal Co., 29 Leg. Int. 213. This case reaffirms the constitutionality of the "Mine Ventilation Law" of 3 March, 1870, P. L. 3, the provisions of which are embodied in the acts of 30 June, 1885. See also *Cwlth. v. Bonnell*, 8 Phila. 534.

A coal mine, containing five strata or seams of coal, was operated through a shaft extending from the surface through the various seams of coal, and the entrance to the shaft was covered by the breaker. In the first and third seams fifty or more miners were employed, mining coal for market. The second and fourth seams were not being worked. In the fifth seam a number of miners, not exceeding twenty, were engaged in working a gangway to connect with a second opening, which had not been completed to that seam, although said second opening or outlet was already connected with the first and third seams, in accordance with the requirements of the act. Under sections three and five of said act the inspector of mines filed a bill in equity to restrain the working of the first and third seams, at the same time that work was being carried on to make a second opening or outlet in the fifth seam. *Held*, that under the proviso to the third section of said act, the work might be carried on as above stated. *Haddock v. Cwlth.* 103 Penn St. 243. (The above decisions all refer to the act of 3 March, 1870, P. L. 3, P. D. 1177.)



30 June, 1885.

Safety catch, etc.

Number to be lowered or hoisted at one time.

Notice of number to be posted.

Ibid, § 4

Duty of owners, etc., in regard to ventilation of mines.

Fire-damp.

Fire-boss to examine before every shift.

Miners prohibited from entering mine until it has been examined.

Ibid, § 5.

Mining-boss to be employed.

His qualifications, and duties in regard to ventilation, etc.

Loose coal.

Props, caps and timbers.

and bottom of the shaft, and an approved safety catch, and sufficient cover over head on every carriage used for lowering and hoisting persons; \* \* \* \* and no greater number of persons shall be lowered or hoisted at any one time than may be permitted by the inspector of the district; and notice of the number so allowed to be lowered or hoisted at any one time shall be kept posted up by the owner, operator or superintendent in a conspicuous place at the opening of the shaft

**402.** The owner or agent of every bituminous coal mine, whether shaft, or slope, or drift, shall provide and hereafter maintain for every such mine ample means of ventilation, affording not less than one hundred cubic feet per minute for each and every person employed in said mine, and as much more as the circumstances may require, which shall be circulated around the main headings and cross-headings and working places to an extent that will dilute, carry off and render harmless the noxious or dangerous gases generated therein; and all mines generating fire-damp shall be kept free of standing gas in the worked-out or abandoned parts of the same as far as practicable, and the entrance thereto shall be properly closed, and cautionary notice shall be posted to warn persons of danger; and every working place, and all other places, where gas is known to exist or supposed to exist, shall be carefully examined by the fire-boss, immediately before each shift, with a safety lamp, and in making said examination it shall be the duty of the fire-boss at each examination to leave at the face of every place so examined evidence of his presence; and it shall not be lawful for any miner to enter any mine or part of mine generating fire-damp, until it has been examined by the fire-boss as aforesaid and reported by him to be safe.

**403.** In order to better secure the proper ventilation of every coal mine, and promote the health and safety of the persons employed therein, the owner or agent shall employ a competent and practical inside overseer, to be called mining-boss, who shall be a citizen and an experienced coal miner, and shall keep a careful watch over the ventilating apparatus and the air-ways, traveling-ways, pumps and pump timbers and drainage; and shall see that, as the miners advance their excavations, all loose coal, slate and rock overhead are carefully secured against falling therein, or on the traveling-ways, and that sufficient props, caps and timbers are furnished, of suitable

size and cut square at both ends and as near as practicable to a proper length for the places where they are to be used; \* \* \* \* and shall see that all water be drained or hauled out of all working places before the miner enters, and as far as practicable kept dry while the miner is at work. And it shall be the duty of the mining boss† to see that proper cut-throughs are made in the room pillars of the miners' places [for the purpose of ventilation]. \* \* \* \* And in all traveling-ways or road, holes for shelter shall be made at least every thirty yards and be kept whitewashed, a space two feet six inches between the wagon and the rib shall be deemed sufficient for shelter. And the mining-boss shall measure the air current, at least once a week, at the inlet and outlet and at or near the face of the headings, he shall keep a record of such measurements \* \* \* \* for the examining of the inspector of the district; he shall, also, on or about the fifteenth day of each month, mail to the inspector of his district a true copy of the air measurements given, stating also the number of persons employed in or about the said mine. \* \* \* \* The safety lamps used for examining mines, or which may be used in working therein, shall be furnished by and be the property of the owner of said mines, and shall be in charge of the agent of such mine; and in all mines, the doors used in assisting or directing the ventilation of the mine, shall be so hung and adjusted that they will close themselves, or be supplied with springs or pulleys so that they cannot be left standing open; and bore holes shall be kept not less than twelve feet in advance of the face, and when necessary, on the sides of working places, which are being driven towards and in dangerous proximity to an abandoned mine, or part of a mine suspected of containing inflammable gases, or which is inundated with water. The mining-boss, his assistant or assistants, shall visit and examine every working place in the mine, at least once every alternate day, while the miners of such place are or should be at work. \* \* \* \* All owners or operators of bituminous coal mines shall keep posted in a conspicuous place about their mines, printed rules, sub-

30 June, 1885.

Drainage.

Cut-throughs.

Holes for shelter.

Air currents to be measured.

Record of measurements to be kept. &amp;c.

Copy of measurements, &amp;c., to be sent monthly to the inspector.

Safety lamps to be property of owner of mines.

Adjustment of doors used for ventilation.

Bore holes.

Visitation and examination to be made every alternate day.

Printed rules to be kept posted.

† A mining-boss has no discretion in the performance of his duties; nor can he delegate them to another; but if the company take from his charge a particular portion of the mine, and place it in charge of another, he will not be responsible for neglect of duty in that portion of the mine, though the company may be responsible in case of accident.—*Cwllth. v. Reynolds*, 1 Kulp, 218.

30 June, 1885.

*Ibid.*, § 6.  
Willful injury to  
shaft, lamp, etc.,  
declared a misde-  
meanor.

Punishment.

Machinery, &c., to  
be fenced off.

Traveling way to  
be cut in the side of  
every hoisting  
shaft.

*Ibid.*, § 7.  
Proceedings for  
making openings on  
adjoining lands.

Viewers to be ap-  
pointed and their  
duties.

*Ibid.*, § 8.  
In year 1889, and  
every four years  
thereafter, gov-  
ernor to appoint  
two mining engi-  
neers.  
Qualifications.

mitted to and approved by the district mining inspector, defining the duties of all persons employed in or about said mines or collieries, which said notice shall be printed in the language or languages used by any ten miners working therein.

**404.** Any miners, workmen or other person who shall intentionally injure any shaft, lamp, instrument, air-course or brattice, or obstruct or throw open air-ways, or carry lighted pipes or matches into places that are worked by safety lamps, or handle or disturb any part of the machinery, or open a door and not close it again, or enter any place of the mine against caution, or disobey any order given in carrying out the provisions of this act, or do any other act whereby the lives or the health of persons, or the security of the mines or the machinery is endangered, shall be deemed guilty of a misdemeanor, and may be punished in a manner provided in the twenty-first section of this act; all machinery about mines shall be properly fenced off, and there shall be cut in the side of every hoisting shaft at the bottom thereof, a traveling way sufficiently high and wide to enable persons to pass the shaft in going from one side of the mine to the other without passing over or under the cage or other hoisting apparatus.

**405.** If any person, firm or corporation is or shall hereafter be seized in his or their own right of coal lands, and it shall not be practicable to comply with the requirements of this act in regard to drainage and ventilation by means of openings on his or their own lands, and the same can be done by means of openings on adjacent lands, he or they may apply by petition to the court of quarter sessions of the proper county, after failure to agree with the owner as to price; \* \* \* \* whereupon the said court shall appoint three disinterested and competent citizens of the county to view the ground designated, and lay out from the point or points mentioned in such petition, a passage or passages for air and water not more than sixteen feet in diameter. \* \* \* \*

**406.** In the year one thousand eight hundred and eighty-nine, and every four years thereafter, the Governor shall, as hereinafter provided, during the month of February, appoint two mining engineers of good repute and of known experience and practice at the time; he also shall, as hereinafter provided, during the same month, and every four years thereafter, notify three president

judges of the courts of common pleas of the judicial districts of the state containing bituminous coal mines, whose duty it shall be, each of them, to appoint one reputable miner of at least five years' practical experience in the mining region of Pennsylvania, in practice at least three months prior to his appointment, and a citizen of the commonwealth not less than five years: *Provided*, That any person having been employed five months prior to the meeting of the examining board, as superintendent, state or county officer shall not serve on examining board. The two engineers and the three miners so appointed shall constitute a board of examiners, whose duty it shall be to inquire into the character and qualifications of candidates for the office of inspector of mines, under the provisions of this act. The examining board so constituted, shall meet in the city of Pittsburg, on the first Monday of April, and, when called together by the Governor for extra occasions, at such time and place as he may designate. \* \* \* \* The qualification of candidates for said office of inspectors of mines, to be inquired into and certified by said examiners, shall be as follows, namely: They shall be citizens of Pennsylvania, of temperate habits, of good repute as men of personal integrity, shall have attained the age of thirty years, and shall have had at least five years' practical experience in the workings of the coal mines of Pennsylvania, and upon the examination they shall give evidence of such theoretical as well as practical knowledge, and general intelligence regarding mines and mining and the working thereof, and all noxious gases, as will satisfy the examiners of their capability and fitness for the duties imposed upon inspectors of mines by the provisions of this act. The board of examiners shall also at their meeting, or when at any time called by the Governor together for an extra meeting, divide the bituminous coal counties of the state into eight inspection districts. \* \* \* \*

Each inspector of mines shall receive for his services an annual salary of two thousand dollars and actual traveling expenses, to be paid quarterly by the State Treasurer upon warrant of the Auditor General; and all mine inspectors hereafter appointed shall make their residence and keep an office in the district for which they are commissioned. \* \* \* \*

**407.** Each inspector of bituminous coal mines shall, before entering upon the discharge of his duties, give

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President judges to  
appoint three  
miners.  
Qualifications of  
miners.

Certain miners dis-  
qualified.

Board of examiners  
constituted.

Duties of the  
board.

Time and place of  
meeting

Qualifications of  
candidates for office  
of inspectors.

Division of state  
into eight districts.

Salaries, etc., of  
inspectors.



30 June, 1885, § 9

Inspectors to give  
bond with sureties.  
And be sworn.

bond in the sum of five thousand dollars, \* \* \* \*  
conditioned for the faithful discharge of his duty, and  
take an oath (or affirmation) to discharge his duties im-  
partially and with fidelity to the best of his knowledge  
and ability.

Certain persons not  
to act as inspectors.

But no person, who shall act as a manager or agent of  
any coal mine, or as a mining engineer, or to be inter-  
ested in operating any coal mine, shall, at the same time,  
act as an inspector of coal mines under this act.

Ibid, § 10.

Duties of inspec-  
tors.

**408.** The inspector of bituminous coal mines shall  
each devote the whole of his time to the duties of his  
office; it shall be his office to examine the mines in his  
district as often as possible, which shall not be less than  
once in three months (and report how often he has visited  
each mine in the year), to see that all the provisions of  
this act are observed and strictly carried out; and he  
shall make record of all examinations of mines showing  
the condition in which he finds them, especially in refer-  
ence to ventilation and drainage, the number of mines in  
his district, the number of persons employed in each  
mine, the extent to which the law is obeyed, and progress  
made in the improvement sought to be secured by the  
passage of this act, the number of accidents and deaths  
resulting from injuries received in or about the mines,  
with cause of such accident or death, which record, com-  
pleted to the thirty-first day of December of each and  
every year, shall, on or before the first day of February  
following, be filed in the office of the Secretary of Inter-  
nal Affairs, to be by him recorded and included in the  
annual report of his department.

Report to be filed  
with and published  
by Secretary of In-  
ternal Affairs.

Ibid, § 11.

Inspectors may en-  
ter mines at all  
times.

**409.** That the inspectors may be enabled to perform  
the duties herein imposed upon them, they shall have  
the right at all times to enter any bituminous coal mine,  
to make examination, or obtain information; they shall  
notify the owners, operators, lessees, superintendent, or  
mining-bosses, in writing, and keep a copy thereof, im-  
mediately of the discovery of any violation of this act,  
\* \* \* \* and in case of such notice being dis-

And notify owners  
of violations of  
acts.

And institute pro-  
ceedings against  
them.

regarded for the space of five days, they shall insti-  
tute proceedings against the owner, operator, lessee,  
superintendent, or mining-boss, of the mine, under the  
provisions of section twenty-one of this act [and may  
apply to court for an injunction to suspend all work in  
and about such mine].

410. Whenever, by reason of any explosion, or other accident, in any bituminous coal mine or the machinery connected therewith, loss of life or serious personal injury shall occur, it shall be the duty of the person having charge of such mine or colliery to give notice thereof forthwith to the inspector of the district, and if any person is killed thereby to the coroner of the county, who shall give due notice of the inquest to be held. \* \* \*

30 June, 1885, § 12.

Explosions or other accidents, to be reported to the inspector

Coroner to be notified.

411. [Provides for the removal of mine inspectors for cause on petition to the court of common pleas.]

Ibid., § 13

Ibid., § 14.

412. [Provides for an appeal to court of quarter sessions by mine owners, or miners, in case of dissatisfaction with any decision of an inspector.]

Proceedings in case of dissatisfaction with any decision of the inspector.  
Ibid., § 15.

413. [On petition of an inspector, court of common pleas may appoint a county examining board, consisting of a mine inspector, an operator and a miner, to examine candidates for the position of mining-boss.]

No person shall act as fire-boss in any bituminous mine, unless granted a certificate of competency by any of the mine inspectors of the bituminous region of Pennsylvania, and it shall be unlawful for any owner, operator, contractor, superintendent, or agent to employ any person as fire-boss who has not obtained such certificate.

Fire-boss not to act without certificate.

After January first, one thousand eight hundred and eighty-six, no owner, operator, contractor, lessee, superintendent or agent shall employ any mining-boss or fire-boss, who does not have the certificate of competency or service required by this section.

Owners, etc., for bidden to employ unauthorized mining or fire boss.

And if any accident shall occur in any mine in which a mining-boss or fire-boss shall be employed, who has no certificate of competency or service as required by this section, by which any miner shall be killed or injured, he or his heirs shall have a right of action against such operator, owner, superintendent, contractor, lessee or agent, and shall recover the full value of the damages sustained.

Liability of owner, etc., for such employment in case of accident.

414. No boy, under the age of twelve years, and no woman or girl of any age, shall be employed or permitted to be in any bituminous coal mine for the purpose of employment therein, nor shall any boy under the age of ten years, or any woman or girl of any age, be employed or permitted to be in or about the outside structure or workings of any bituminous mine or colliery, for the purpose of employment. *Provided however,* That this provision shall not affect the employment of a boy or a fe-

Ibid., § 16

Boys under a certain age, and all girls and women prohibited from being employed.

Except as to office or clerical work.

30 June, 1885.

Ibid, § 17.

Liability of owners, etc., for damages.

Ibid, § 18.

Owners, etc., to keep stretchers at mouth of the drift, etc.

Ibid, § 19.

Inspector to make report of the condition of mine, and post same.

Contents of such report.

To remain posted for a year.

Ibid, § 20.

Ibid, § 21.

Violation of provisions of this act declared a misdemeanor

Penalty

male of suitable age in an office, or in the performance of clerical work at such mine or colliery.

**415.** For any injury to person or property occasioned by any violation of this act, or any wilful failure to comply with its provisions, a right of action against the party at fault shall accrue to the party injured for the direct damage sustained thereby; and in any case of loss of life by reason of such violation or wilful failure, a right of action against the party at fault shall accrue to the widow and lineal heirs of the person, whose life shall be lost, for like recovery of damages for the injury they shall have sustained.

**416.** It shall be the duty of owners, operators, contractors, superintendents, lessees or agents to keep at the mouth of the drift, shaft, or slope, or at such other place as shall be designated by the mine inspector, stretchers properly constructed for the purpose of carrying away any miner or employe working in or about such mine, who may in any way be injured in and about his employment.

**417.** It shall be the duty of the mine inspector, on each visit to any mine, to make out a written, or partly written and partly printed, report of the condition in which he finds such mine and post the same in the office at the mine. The said report shall give the date of the visit, the number of visits during the year, the total number of mines in his district, the number of feet of air in circulation and where measured, and such other information as he shall deem necessary; and the said report shall remain posted in the office for one year, and said report may be examined by any miner or person employed in and about such mine.

**418.** [Provides for annual report on or before January 15, by the owner, operator or superintendent of every mine, to the inspector of his district.]

**419.** The neglect or refusal to perform the duties required to be performed by any section of this act, by the parties therein required to perform them, or the violation of any of the provisions or requirements hereof, shall be deemed a misdemeanor, and shall, upon conviction, be punished by fine of not less than two hundred dollars and not exceeding five hundred dollars, at the discretion of the court. And in default of payment of such fine and costs for the space of ten days, the defendant shall be sen-

tenced to imprisonment in the county jail for a period not exceeding six months.

**420.** The provisions of this act shall not apply to any mine employing less than ten persons in any one period of twenty-four hours.

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Ibid. § 22

Act not to apply to certain mines.

## Anthracite Mines.

### ARTICLE I.

**421.** This act shall apply to every anthracite coal mine or colliery in the commonwealth, provided the said mine or colliery employs more than ten persons.

Ibid. 1885, § 1.  
P. L. 218.  
P. D. 2232.

### ARTICLE II.

#### INSPECTORS AND INSPECTION DISTRICTS.

**422.** [Anthracite coal field divided into seven inspection districts.]

Art. II, § 1

**423.** [Examining boards to be appointed by the court of common pleas.]

Ibid. § 2.

**424.** The said board of examiners shall be composed of three reputable coal miners, in actual practice, and two reputable mining engineers, all of whom shall be appointed at the first term of court in each year to hold their places during the year. Any vacancies that may occur in the board of examiners shall be filled by the court as they occur.

Ibid. § 3.

Qualifications and number of examiners.

When to be appointed and term of office.

Vacancies to be filled by the court.

**425.** Whenever candidates for the office of inspector are to be examined, the said examiners shall give public notice of the fact, in not less than two papers published in the county. \* \* \* \*

Ibid. § 4.

Public notice to be given of time and place of meeting.

Upon the recommendation of the board of examiners as aforesaid, the Governor shall appoint such person to fill the office of inspector of mines under this act and shall issue to him a commission for the term of five years, subject, however, to removal for neglect of duty or malfeasance in office, as hereinafter provided for.

Governor to appoint on recommendation of board.

And commission for term of five years.

**426.** The person so appointed must be a citizen of Pennsylvania and shall have attained the age of thirty years. He must have a knowledge of the different systems of working coal mines, and have been practically connected with the anthracite coal mines of Pennsylvania for a period of not less than five years, and he must also have had experience in the working and ventilation of coal mines where noxious and explosive gases are evolved. \* \* \* \*

Ibid. § 5.

Qualifications of inspector of mines



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Must provide himself with instruments, etc.

Ibid. § 7.

Residence and attention to duties.

Duties

Make annual report to Secretary of Internal Affairs

Contents of report.

Ibid. § 8.

Ibid. § 10.

Certain persons disqualified from holding the office of inspector of mines.

Ibid. § 11.

On petition to the court, inspectors may be removed on cause shown.

Ibid. § 13.

Present inspectors to serve out their respective terms.

He shall also provide himself with the most modern instruments and appliances for carrying out the intentions of this act.

**427.** Each of the said inspectors shall reside in the district for which he is appointed, and shall give his whole time and attention to the duties of the office. He shall examine all the collieries in his district as often as his duties will permit, not less than four times a year, or oftener if the exigencies of the case or the condition of the mines require it, see that every necessary precaution is taken to secure the safety of the workmen, \* \* \* \* and make an annual report of his proceedings to the Secretary of Internal Affairs of the commonwealth at the close of every year, enumerating all the accidents in and about the collieries of his district. \* \* \* \* And the result of his labors generally shall be fully set forth.

**428.** [Board of examiners may readjust districts.]

**429.** No person, who shall act or practice as a land agent, or as the manager, or agent of any coal mine or colliery, or as a mining engineer, or who is pecuniarily interested in operating any coal mine or colliery in his district, shall at the same time hold the office of inspector of mines under this act.

**430.** [On petition of fifteen reputable coal operators or miners to court of common pleas inspectors may be removed for cause.]

**431.** The persons who at the time this act goes into effect are acting as inspectors of mines under the acts hereby repealed shall continue to act in the same manner as if they had been appointed under this act and until the term for which they were appointed has expired

### ARTICLE III.

#### SURVEYS, MAPS AND PLANS.

**432.** [See preceding act, 399, the provisions of which are similar to those of this article.]

### ARTICLE IV.

#### SHAFTS, SLOPES, OPENINGS AND OUTLETS.

**433.** [Prohibits the employment of persons in mines prohibited unless there are two outlets to each seam of coal. Sections 1-21 of this article cover much the same ground as §§ 2, 3 and 4 of the preceding act, 400-1-2.]

Map or plan of mine to be made by owners, etc.

The following rules shall be observed as far as practicable in every shaft to which this act applies:

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 Rules to be observed.

*First.* After each and every blast the chargeman must see that all loose material is swept down from the timbers before the workmen descend to their work.

*Second.* After a suspension of work, and also after firing a blast in a shaft where explosive gases are evolved, the person in charge must have the said shaft examined and tested with a safety lamp before the workmen are allowed to descend.

*Third.* Not more than four persons shall be lowered or hoisted in any shaft on a bucket at the same time, and no person shall ride on a loaded bucket.

*Fourth.* Whenever persons are employed on platforms, in shafts, the person in charge must see that the said platforms are properly and safely constructed.

*Fifth.* While shafts are being sunk all blasts therein must be exploded by an electric battery.

*Sixth.* Every person who fails to comply with or who violates the provisions of this article shall be guilty of an offense against this act.

## ARTICLE V.

### BOILERS AND CONNECTIONS, MACHINERY, ET CETERA.

**434.** [The ten sections of this article provide that all boilers in and about mines shall be kept in good order and inspected every six months; that no boiler shall be placed within one hundred feet of a coal breaker hereafter erected; proper safety-valves and steam-gauges shall be used; all machinery and stairs shall be protected by covering or railing; a signal apparatus shall be established at important points in every breaker; all tampering with machinery is prohibited.]

## ARTICLE VI.

### WASH HOUSES.

**435.** It shall be the duty of the owner, operator or superintendent of each mine or colliery, at the request in writing of the inspector of mines, to provide a suitable building, not an engine or boiler house, which shall be convenient to the principal entrance of such mine, for the use of the persons employed therein for the purpose of washing themselves and changing their clothes when entering the mine and returning therefrom. The said buildings shall be maintained in good order, be properly lighted and

*Ibid.*, § 1.

Convenient wash-house to be provided on request of inspector.

How to be kept and supplied.

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Penalty for failure  
to provide, or for  
injury to wash-  
house, etc.

heated, and supplied with pure cold and warm water, and shall be provided with facilities for persons to wash. If any person or persons shall neglect or fail to comply with the provisions of this article, or maliciously injure, or destroy, or cause to be injured or destroyed, the said building, or any part thereof, or any of the appliances or fittings used for supplying light, heat and water therein, or doing any act tending to the injury or destruction thereof, he or they shall be deemed guilty of an offense against this act.

## ARTICLE VII.

## AMBULANCES AND STRETCHERS.

**436.** [An ambulance and stretchers of approved construction shall be kept at all mines employing twenty or more persons, except where all the workmen live within half a mile of the principal entrance to the mine; and one ambulance will serve for two mines situated within a mile of each other.]

## ARTICLE VIII.

## CERTIFIED MINE FOREMAN.

## Art. VIII. § 1.

After July 1, 1886,  
mine foreman to  
be registered

**437.** From and after the first day of July, one thousand eight hundred and eighty-six, no person shall be permitted to act as mine foreman, unless he is registered as a holder of a certificate under this act.

## Ibid. § 2.

Certificates of  
qualification to be  
granted by Secre-  
tary of Internal Af-  
fairs.

**438.** Certificates of qualification to mine foreman shall be granted by the Secretary of Internal Affairs to every applicant, who may be reported by the examiners, as hereinafter provided, as having passed a satisfactory examination, and as having given satisfactory evidence of at least five years' practical experience, and of good conduct, capability and sobriety.

After examination.

After five years'  
service, etc.

The certificate shall be in manner and form as shall be prescribed by the Secretary of Internal Affairs, and a record of all certificates issued shall be kept in his department.

Form of certificate.

Record to be kept.

## Ibid. § 3.

Board of examiners  
to be appointed in  
each district.

**439.** For the purpose of examination of candidates for such certificates, a board of examiners shall be appointed in each of the inspection districts provided for by this act. The said board shall consist of the district inspector of mines, a practical miner and one owner, operator or superintendent of a mine. The said inspector shall act *ex-officio*, and the said engineer and owner, operator or superintendent shall be appointed in like manner, and

Number and qual-  
ifications of board.

Appointment.

at the same time, as the boards of examiners for candidates for mine inspectorship under this act are now appointed. The said board shall act as such for the period of one year from the date of their appointment. Meetings of the board may be held at any time, and they may make such rules and conduct such examinations as in their judgment may seem proper for the purpose of such examinations. The said board shall report their action to the Secretary of Internal Affairs, and at least two of the members thereof shall certify to the qualification of each candidate who has passed such examination. \* \* \* \*

**440.** No mine shall be operated for a longer period than thirty (30) days without the supervision of a mine foreman: *Provided, however,* That any mine employing ordinarily less than ten (10) persons under ground, or one whose daily output is less than fifty (50) tons of coal, shall be exempt from the operations of this section.

ARTICLE IX.

EMPLOYMENT OF BOYS AND FEMALES.

**441.** No boy under the age of fourteen years, and no woman or girl of any age, shall be employed or permitted to be in any mine for the purpose of employment therein; nor shall a boy under the age of twelve years, or a woman, or girl of any age, be employed or permitted to be in or about the outside structures or workings of a colliery for the purpose of employment, but it is provided, however, that this prohibition shall not affect the employment of a boy or female of suitable age in an office, or in the performance of clerical work at a colliery.

**442.** When an employer is in doubt as to the age of any boy or youth applying for employment in or about a mine or colliery, he shall demand and receive proof of the said lawful employment age of such boy or youth by certificate from the parent or guardian, before said boy or youth shall be employed.

**443.** If any person or persons contravene, or fail to comply with the provisions of this act in respect to the employment of boys, young male persons, or females, or if he or they shall connive with, or permit others to contravene or fail to comply with said provisions, or if a parent or guardian of a boy or young male person, make or give a false certificate of the age of such boy or young male person, or knowingly do or perform any other act for the purpose of securing employment for a boy or young male person under the lawful employment age

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Term

Meetings.

Report

Ibid, § 6

Mines not to be operated without foremen.

Proviso

Ibid, Art. IX, § 1.

Boys under a certain age, and all females not to be employed about mines.

Except for office or clerical work.

Ibid, § 2.

How age of applicant is to be determined.

Ibid, § 3

Penalty for violation of this provision.



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and in contravention of the provisions of this act, he or they shall be guilty of an offense against this act.

## ARTICLE X.

## VENTILATION.

Ibid, Art X, § 1

Ventilation to be provided.

Ibid, § 2.

Furnaces prohibited in certain mines

Ibid, § 3

Minimum quantity of air to be produced.

Ibid, § 4.

How ventilating currents are to be conducted, etc.

Ibid, § 5.

Abandoned mines to be kept free of gases.

Ibid, § 7.

When mines are to be divided into districts.

Each district to have a separate split of pure air, etc.

Separation of air passages.

Ibid, § 7.

Area of air passages.

Velocity.

**444.** The owner, operator or superintendent of every mine shall provide and maintain an adequate supply of pure air for the same, as hereinafter provided.

**445.** At the expiration of one year from and after the passage of this act, it shall not be lawful to use a furnace for the purpose of ventilating any mine wherein explosive gases are generated.

**446.** The minimum quantity of air thus produced shall not be less than two hundred (200) cubic feet per minute, for each and every person employed in any mine, and as much more as the circumstances may require.

**447.** The ventilating currents shall be conducted and circulated to and along the face of each and every working place throughout the entire mine, in sufficient quantities to dilute, render harmless and sweep away smoke and noxious or dangerous gases, to such an extent that all working places and traveling roads shall be in a safe and fit state to work and travel therein.

**448.** All worked out or abandoned parts of a mine, so far as practicable, shall be kept free of dangerous bodies of gases.

**449.** One year after the passage of this act, every mine employing more than seventy-five (75) persons must be divided into two or more districts; each district shall be provided with a separate split of pure air, and the ventilation shall be so arranged that no more than seventy-five (75) persons shall be employed at the same time in any one current or split of air.

The inlet and return air passages for any particular district must be separated by a pillar of coal or stone, if the thickness and dip of the vein will permit, except where it is necessary to cut through said dividing pillar for the purpose of ventilation, traffic or drainage.

**450.** All of the air passages shall be of a sufficient area to allow the free passage of not less than two hundred (200) cubic feet of air per minute for every person working therein, and in no case, in mines generating explosive gases, shall the velocity exceed four hundred and fifty (450) lineal feet per minute in any opening, through

which the air currents pass, if gauze safety lamps are used, except in the main inlet or outlet airways.

**451.** All cross cuts connecting the main inlet and outlet air passages of every district, when it becomes necessary to close them permanently, shall be substantially closed with brick or other suitable building material, laid in mortar, or cement wherever practicable, but in no case shall said air stoppings be constructed of plank, except for temporary purposes, or as above provided.

**452.** All doors used in assisting or in any way affecting the ventilation shall be so hung and adjusted, that they will close of their own accord and cannot stand open.

**453.** All main doors shall have an attendant, whose constant duty it shall be to open them for transportation and travel and prevent them from standing open, longer than is necessary for persons or cars to pass through.

**454.** All main doors shall be so placed that when one door is open, another, which has the same effect upon the same current, shall be and remain closed, and thus prevent any temporary stoppage of the air current.

**455.** An extra main door shall be placed and kept standing open so as to be out of reach of accident, and so fixed that it can be at once closed in the event of an accident to the doors in use.

**456.** The frame work of such main doors shall be substantially secured in stone or brick laid in mortar or cement, unless otherwise permitted in writing by the inspector.

**457.** All permanent air bridges shall be substantially built of such material and of such strength as the circumstances may require.

**458.** The quantities of air in circulation shall be ascertained with an anemometer or other efficient instrument. Such measurements shall be made by the inside foreman, or his assistant, once every week at the inlet and outlet airways; also at or near the face of each gangway, and shall be entered in the colliery report book.

**459.** A copy of these air measurements shall be sent to the inspector before the twelfth (12) day of each month for the preceding month, together with a statement of the number of persons employed in each district.

**460.** All ventilators used at mines generating explosive gases shall be provided with recording instruments by which the number of revolutions of the fan shall be

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Ibid, § 8.

Cross cuts to be closed.

Ibid, § 9

Doors.

Ibid, § 10.

Main doors to be attended to.

Ibid, § 11.

How main doors are to be placed.

Ibid, § 12.

Extra main doors.

Ibid, § 13.

Framework of main doors.

Ibid, § 14.

Air bridges.

Ibid, § 15.

Air measurements.

By whom to be made.

Recorded.

Ibid, § 16.

Copies to be sent to the inspector

Ibid, § 17.

Recording instruments.

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Ibid, § 18.

Penalty for violation of this article.

registered for each hour, and such data shall be taken and reported in the colliery report book.

**461.** Any person or persons who shall neglect or fail to comply with the provisions of this article, or who shall knowingly make any false report in regard to air measurements shall be guilty of an offense against this act.

The defendant's mine, at the point where workings are going on, is free from standing gas; but these workings connect with and open into old abandoned workings, where standing gas accumulates, flows and by frequent falling of the roof is liable to be driven into the defendant's workings, to affect the air and to cause destructive explosions: Held, That under these circumstances "the entire mine is not free from danger to the lives and health of the men," nor in a fit state for them to work therein, as required by the ventilation act (3d March, 1870, P. L. 3), and an injunction was awarded.

A mine is not free from danger when it actually exists within the mine simply because the danger originates in causes located a few feet or yards beyond and outside of the boundary lines. The act deals with its presence, not its origin. The act does not require that a mine be kept absolutely clear of gas, for this is impossible; but as fast as evolved it is, by the introduction of pure air and the process of ventilation, "diluted, rendered harmless and expelled," and its accumulation as, and so as to fall within the designation of, "standing gas" avoided.—Cwlth. v. Tompkins, 1 Luz. Leg. Reg. 341.

## ARTICLE XI.

### PROPS AND TIMBERS.

Ibid, Art. XI, § 1.

Props and timbers to be furnished the miners at their request.

**462.** It shall be the duty of the owner, operator, superintendent or mine foreman of every mine to furnish to the miners, at their request, all props and timbers necessary for the safe mining of coal and for the protection of the lives of the workmen. Such props and timbers shall be suitably prepared and shall be delivered to the workmen, as near to their working places as they can be conveyed in ordinary mine cars, free of charge.

Ibid, § 2

Mine foreman to be so notified.

**463.** Every workman in want of props or timbers shall notify the mine foreman, or his assistant, of the fact at least one day in advance, giving the length of the props or timber required, and in case of danger from loose roof or sides he shall not continue to cut or load coal until the said props and timber have been properly furnished and the place made secure.\*

When work man stop for want of props, etc.

\*In order to make out a criminal offense against the statute for non-furnishing of props, etc., it must be shown that a specific demand had been made at least one day in advance, giving the length of the props or timber required. A general demand by a committee of workmen, and a refusal generally to cut and prepare, is not sufficient. Cwlth. v. Richmond, 2 Com. Pleas Reporter, 189.

## ARTICLE XII.

## GENERAL RULES.

464. The following general rules shall be observed in every mine to which this act applies:

*Rule 1.* The owner, operator or superintendent of a mine or colliery shall place the underground workings thereof and all that is related to the same under the charge and daily supervision of a competent person, who shall be called "mine foreman."

*Rule 2.* Whenever a mine foreman cannot personally carry out the provisions of this act so far as they pertain to him, the owner, operator or superintendent shall authorize him to employ a sufficient number of competent persons to act as his assistants, who shall be subject to his orders.

*Rule 3.* The mine foreman shall have charge of all matters pertaining to ventilation, and the speed of the ventilators shall be particularly under his charge and direction,

*Rule 4.* All accessible parts of an abandoned portion of a mine, in which explosive gases have been found, shall be carefully examined by the mine foreman, or his assistants, at least once every week, and all danger found existing therein shall be immediately removed. A report of said examination shall be recorded in a book kept at the colliery for that purpose and signed by the person making the same.

*Rule 5.* In mines generating explosive gases, the mine foreman or his assistants shall make a careful examination every morning of all working places and traveling roads before the workmen shall enter the mine, and such examinations shall be made with a safety lamp within three hours at most before time for commencing work, and a workman shall not enter the mine or his working place until the said mine or part thereof and working place are reported to be safe. Every report shall be recorded without delay in a book which shall be kept at the colliery for the purpose, and shall be signed by the person making the examination.

*Rule 6.* The person who makes said examination shall establish proof of the same by marking plainly the date thereof at the face of each working place.

*Rule 7.* A station or stations shall be established at the entrance to each mine, or different parts of each

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General rules.

Mine to be in charge of the mine foreman

Assistants.

Charge of ventilation.

Abandoned mines to be examined.

And report thereof recorded.

Examination of mines generating gases.

Proof to be marked.

Stations to be established.



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When noxious  
gases are found  
workmen to be  
withdrawn.

Safety lamps only  
to be used in cer-  
tain mines.

Keys.

Blasts.

mine as the case may require, and a workman shall not pass beyond any such station, until the mine or part of the mine beyond the same has been inspected and reported to be safe.

*Rule 8.* \*If at any time it is found by the person for the time being in charge of the mine, or any part thereof, that, by reason of noxious gases prevailing in such mine, or such part thereof, or of any cause whatever, the mine or the said part is dangerous, every workman, except such persons as may be required to remove the danger, shall be withdrawn from the mine, or such part thereof as is so found dangerous, until the said mine, or said part thereof, is examined by a competent person and reported by him to be safe.

*Rule 9.* In every working approaching any place where there is likely to be an accumulation of explosive gases, or in any working in which danger is imminent from explosive gases, no light or fire, other than a locked safety lamp, shall be allowed or used. Whenever safety lamps are required in any mine, they shall be the property of the owner of said mine, and a competent person, who shall be appointed for the purpose, shall examine every safety lamp immediately before it is taken into the workings for use and ascertain it to be clean, safe and securely locked, and safety lamps shall not be used until they have been so examined and found safe, clean and securely locked, unless permission be first given by the mine foreman to have the lamps used unlocked.

*Rule 10.* No one, excepted a duly authorized person, shall have in his possession a key, or any other contrivance, for the purpose of unlocking any safety lamp in any mine where locked safety lamps are used. No lucifer matches or any other apparatus for striking light shall be taken into said mine or parts thereof.

*Rule 11.* No blast shall be fired in any mine where locked safety lamps are used, except by permission of the mine foreman or his assistant, and before a blast is fired, the person in charge must examine the place and

\*Under rule 8, Art. XII, act 30 June, 1885, if by reason of noxious gases, or of any cause whatever, an anthracite coal mine has become dangerous, it is the duty of the mine foreman to compel every workman to retire from the mine and to remain out until after a proper examination of its condition has been made. Failure to do this is negligence and a disobedience of the law.—Commonwealth v. Coonrad, 14 Luzerne Leg. Reg. 311.

adjoining places and satisfy himself that it is safe to fire such blast before such permission is given.

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*Rule 12.* The mine foreman, or his assistant, shall visit and examine every working place in the mine at least once every alternate day, while the men of such place are or should be at work, and shall direct that each and every working place is properly secured by props or timber, and that safety in all respects is assured by directing that all loose coal or rock shall be pulled down or secured, and that no person shall be permitted to work in an unsafe place, unless it be for the purpose of making it secure.

Visitations of mines.

*Rule 13.* The mine foreman, or some other competent person or persons to be designated by him, shall examine, at least once every day, all slopes, shafts, main roads, traveling ways, signal apparatus, pulleys and timbering, and see that they are in safe and efficient working condition.

Examination of slopes, etc.

*Rule 14.* Any person having charge of a working place in any mine shall keep the roof and sides thereof properly secured by timber, or otherwise, so as to prevent such roof and sides from falling, and he shall not do any work or permit any work to be done under loose or dangerous material, except for the purpose of securing the same.

Roofs and sides to be secured.

*Rule 15.* Whenever a place is likely to contain a dangerous accumulation of water, the working approaching such place shall not exceed twelve (12) feet in width, and there shall be constantly kept, at a distance of not less than twenty (20) feet in advance, at least one bore hole near the center of the working and sufficient flank bore holes on each side.

Danger from water

*Rule 16.* No person shall ride upon or against any loaded car, cage or gunboat in any shaft, slope or plane in or about a mine or colliery.

Riding on loaded cars.

*Rule 17.* Not more than ten (10) persons shall be hoisted or lowered at any one time in any shaft or slope, and whenever ten persons shall arrive at the bottom of any shaft or slope in which persons are regularly hoisted or lowered, they shall be furnished with an empty car or cage and be hoisted, except however in mines where there is provided a traveling way having an average pitch of fifteen degrees (15°) or less and not more than one thousand feet in length.

Number of persons to be hoisted or lowered at one time

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Qualifications of  
engineer

*Rule 18.* An engineer placed in charge of an engine, whereby persons are hoisted or lowered in any mine, shall be a sober and competent person of not less than twenty-one (21) years of age.

Working of engine.

*Rule 19.* Every engineer shall work his engine slowly and with great care when any person is being lowered or hoisted in a shaft or slope, and no one shall interfere with or intimidate him while in the discharge of his duties.

Duty of the engi-  
neer in charge of  
the hoisting ma-  
chinery.

*Rule 20.* An engineer, who has charge of the hoisting machinery by which persons are lowered or hoisted in a mine, shall be in constant attendance for that purpose during the whole time any person or persons are below ground, and he shall not allow any person or persons, except such as may be deputed by the owner, operator or superintendent, to handle or meddle with the engine under his charge or any part of its machinery.

Signals.

*Rule 21.* When any person is about to descend or ascend a shaft or slope, the headman or footman, as the case may be, shall inform the engineer, by signal or otherwise, of the fact, and the engineer shall return a signal before moving or starting the engine. In the absence of a headman or footman, the person or persons about to descend or ascend shall give and receive the signals in the same manner.

Outside foreman.

*Rule 22.* The owner, operator or superintendent of a colliery shall place a competent person, to be called outside foreman, in charge of the breaker and the outside work of such colliery, and who shall direct, and, as far as practicable, see that the provisions of this act are complied with in respect to the breaker, outside machinery, ropes, cages and all other things pertaining to the outside work, unless otherwise provided for in this act.

Dirt in coal break-  
ers.

*Rule 23.* In all coal breakers, where the coal dust is so dense as to be injurious to the health of persons employed therein, the owner, operator or superintendent of said breaker shall, upon the request of the inspector, immediately adopt measures for the removal of the dust, as far as practicable.

Injuries to ventila-  
ting current, roof  
etc. to be reported.

*Rule 24.* Any miner, or other workman, who shall discover anything wrong with the ventilating current, or with the condition of the roof, sides, timber or roadway, or with any other part of the mine, in general, such as would lead him to suspect danger to himself, or to his fellow-workmen, or to the property of his employer, shall immediately report the same to the mine foreman, or

other person for the time being in charge of that portion of the mine.

*Rule 25.* Any person or persons who shall knowingly or wilfully damage, or without proper authority remove, or render useless any fencing, means of signaling, apparatus, instrument or machine, or shall throw open or obstruct any airway, or open a ventilating door and not have the same closed, or enter a place in or about a mine against caution, or carry fire, open lights or matches in places where safety lamps are used, or handle without authority, or disturb any machinery or cars, or do any other act or thing, whereby the lives or health of persons, or the security of the property in or about a mine or colliery are endangered, shall be guilty of an offense against this act.

Willful damage to mine or equipments thereof.

30 June, 1885.

*Rule 26.* Gunpowder, or any other explosive, shall not be stored in a mine, and a workman shall not have at any one time in any one place more than one keg or box containing twenty-five (25) pounds, unless more is necessary for a person to accomplish one day's work.

Explosives.

*Rule 27.* Every person who has gunpowder, or other explosive in a mine, shall keep it in a wooden or metallic box securely locked, and such box shall be kept at least ten feet from the tracks, and in all cases where room at such distance is available.

How to be kept

*Rule 28.* Whenever a workman shall open a box containing explosives, or while in any manner handling the same he shall first place his lamp not less than five feet from such explosive and in such a position that the air current cannot convey sparks to it, and a workman shall not approach nearer than five feet to an open box containing powder, with a lighted lamp, lighted pipe or any other thing containing fire.

And handled.

*Rule 29.* When high explosives, other than gunpowder, are used in any mine, the manner of storing, keeping, moving, charging and firing, or in any manner using such explosives, shall be in accordance with special rules, as furnished by the manufacturers of the same. The said rules shall be endorsed with his or their official signature, and shall be approved by the owner, operator or superintendent of the mine in which such explosives are used.

To be stored, etc., in accordance with special rules.

Rules to be approved by owner of mine.

*Rule 30.* In charging holes for blasting in slate or rock in any mine, no iron or steel pointed needle shall be used, and a tight cartridge shall not be rammed into a hole in

Needle.



30 June, 1885.

Tamping bar

coal, slate or rock with an iron or steel tamping bar, unless the end of the tamping bar is tipped with at least six (6) inches of copper, or other soft metal.

Missed charge

*Rule 31.* A charge of powder, or any other explosive, in slate or rock, which has missed fire, shall not be withdrawn or the hole re-opened.

Match.

*Rule 32.* A miner or other person who is about to explode a blast by the use of a patent or other squibs, or matches, shall not shorten the match, nor saturate it with mineral oil, nor turn it down when placed in the hole, nor ignite it except at its extreme end, nor do anything tending to shorten the time the match will burn.

Notice of blast.

*Rule 33.* When a workman is about to fire a blast, he shall be careful to notify all persons who may be in danger therefrom, and shall give sufficient alarm, so that any person or persons who may be approaching shall be warned of the danger.

Examinations after each blast.

*Rule 34.* Before commencing work, and also after the firing of every blast, the miner, working a breast or any other place in a mine, shall enter such breast or place to examine and ascertain its condition, and his laborer or assistant shall not go to the face of such breast or place until the miner has examined the same and found it to be safe.

Qualifications of blaster.

*Rule 35.* No person shall be employed to blast coal or rock unless the mine foreman is satisfied that such person is qualified by experience and judgment to perform the work with ordinary safety.

Inexperienced blaster not to be employed.

*Rule 36.* A person who is not a practical miner shall not charge or fire a blast in the absence of an experienced miner, unless he has given satisfactory evidence of his ability to do so with safety and has obtained permission from the mine foreman or person in charge.

Accumulation of gas.

*Rule 37.* An accumulation of gas in mines shall not be removed by brushing, where it is practicable to remove it by brattice.

Ignited gas to be extinguished.

*Rule 38.* When gas is ignited by blast or otherwise, the person igniting the same shall immediately extinguish it, if possible, and notify the mine foreman or his assistant of the fact, and workmen must see that no gas blowers are left burning upon leaving their working places.

Duties of fireman in charge of boilers.

*Rule 39.* Every fireman in charge of a boiler or boilers for the generation of steam shall keep a constant watch of the same; he shall see that the steam pressure does not at any time exceed the limit allowed by the outside foreman or superintendent; he shall frequently try the

safety valve and shall not increase the weight on the same; he shall maintain a proper depth of water in each boiler, and if anything should happen to prevent this, he shall report the same without delay to the foreman for the time being in charge, and take such other action as may, under the particular circumstances, be necessary for the protection of life and preservation of property.

30 June, 1885

*Rule 40.* At every shaft or slope, in which provision is made in this act for lowering and hoisting persons, a headman and footman shall be designated by the superintendent or foreman to be at their proper places from the time that persons begin to descend until all the persons, who may be at the bottom of said shaft or slope when quitting work, shall be hoisted. Such headman and footman shall personally attend to the signals, and see that the provisions of this act, in respect to lowering and hoisting persons in shafts or slopes, shall be complied with.

Headman and footman.

Their duties.

*Rule 41.* No person, except the man giving the signal, shall jump on a car, cage or gunboat after the signal to start has been given, and if any person should enter a car, cage or gunboat in excess of the lawful number, the headman or footman shall notify him of the fact and request him to get off, which request must be immediately complied with. Any violation of this rule must be reported promptly to the mine foreman.

Jumping on cars prohibited

*Rule 42.* Every passage way, used by persons in any mine and also used for transportation of coal or other material, shall be made of sufficient width to permit persons to pass moving cars with safety, but if found impracticable to make any passage way of sufficient width, then safety holes of ample dimensions and not more than one hundred and fifty feet apart shall be made on one side of said passage way. The said passage way and safety holes shall be kept free from obstructions and shall be well drained, the roof and sides of the same shall be made secure.

Construction of passage way

*Rule 43.* When locomotives are used in any mine their speed shall not exceed six miles per hour, and an efficient alarm shall be provided and attached to the front end of every train of cars pushed by a locomotive in any mine or part of a mine.

Speed of locomotives.

*Rule 44.* Locomotives propelled by steam, if using fire, shall not be used in any passage way, which is also used as an in-take air way to any mine or part of a mine where persons are employed, unless there be a sufficient quan-

Use of locomotives in certain passage ways prohibited.

30 June, 1885.

Coupling of cars

Use and construction of cars for gravity roads.

Runners and their qualifications

Safety holes

Safety blocks.

Travel on gravity roads prohibited. When traffic thereon to be suspended.

Construction of mine cars regulated.

tity of air circulating therein to maintain a healthy atmosphere.

*Rule 45.* No person, except the driver and helper, shall couple or uncouple loaded or empty cars while the same are in motion

*Rule 46.* When cars are run on gravity roads by brakes or sprags, the runner shall ride only on the rear end of the last car, and when said cars are run by sprags, a space of not less than two feet from the body of the car shall be made on one or both sides of the track, whenever it may be necessary for the runner to pass along the side of the moving car or cars, and said space or passage way shall always be kept free from obstruction.

*Rule 47.* No person shall run cars on gravity roads, or act as a driver or runner, or sprag any mine car after it has been started from the face of a chamber, unless he is authorized to do so by the mine foreman or his assistant; and all runners engaged in any mine or part of a mine must have attained the age of fifteen (15) years.

*Rule 48.* When deemed necessary by the mine inspector and upon his request in writing to the owner, operator or superintendent, safety holes shall be made at the bottom of all slopes and planes, and shall be kept free from obstruction, to enable the footman to escape readily in case of danger.

*Rule 49.* Safety blocks, or some other device for the purpose of preventing cars from falling into a shaft, or running away on a slope or plane, shall be placed at or near the head of every shaft, slope or plane, and said safety blocks or other device must be maintained in good working order.

*Rule 50.* No person shall travel on any gravity plane while cars are being hoisted or lowered thereon. Whenever ten persons arrive at the bottom or top of any plane on which it is necessary for men to travel, traffic thereon shall be suspended for a period of time long enough to permit them to reach the top or bottom of said plane.

*Rule 51.* From and after the passage of this act no mine car shall be built or reconstructed for use in any mine, unless the bumpers are of sufficient length and width to keep the bodies of said cars separated by not less than twelve (12) inches when the cars stand on a straight level road and the bumpers touch each other, and five years after the passage of this act, no mine car

shall be used in any mine unless it complies with the above conditions.

30 June, 1885.

*Rule 52.* Every person who wilfully or negligently acts in contravention of, or fails to comply with, any of the foregoing rules, or any of the provisions of this article, shall be guilty of an offense against this act.

Penalty for violation of this article.

### ARTICLE XIII.

#### PROVISION FOR SPECIAL RULES.

**465.** [This article permits the establishment of special rules for particular mines to be signed by the district inspector and approved by the county court.]

Special rules to be established.

### ARTICLE XIV.

#### INQUESTS.

**466.** [Provides for prompt notice to inspectors of loss of life to miners, and in such case or when the lives of those employed in a mine are in danger, the inspector shall at once visit the scene of the accident, and, if necessary, shall notify the coroner, and shall make a record of all such accidents.]

### ARTICLE XV.

#### RETURNS, NOTICES, ETC.

**467.** Notices of deaths, or serious injuries resulting from accident in or about mines or collieries, shall be made to the inspector of mines in writing, and shall specify the name, age and occupation of the person killed or injured, and also the nature and character of the accident and of the injury caused thereby.

*Ibid.* Art. XV § 1

Notices of deaths, etc., to be sent to inspector.

**468.** The owner, operator or superintendent of a mine or colliery shall, within two weeks, give notice to the inspector of the district in which said mine or colliery is situated in any or all of the following cases: \* \* \* \*

*Ibid.* § 2.

Other notices to be given.

*Fifth.* Where the pillars of a mine are about to be removed or robbed.

Removal of pillars.

*Sixth.* Where a squeeze, or crush, or any other cause, or change may seem to affect the safety of persons employed in any mine, or where fire occurs, or a dangerous body of gas is found in any mine. \* \* \* \*

Crush, fire, gas, etc.

### ARTICLE XVI.

#### INJUNCTIONS.

**469.** [Upon the application of the district inspector, courts may restrain by injunction the working of any mine in which any person is employed in contravention of the provisions of this act.]

Courts may restrain the working of mines.



## ARTICLE XVII.

## ARBITRATION.

30 June, 1885.  
Art. XVII, § 1  
When arbitration  
may be had.

How arbitrators  
are to be chosen.

Decision to be final

**470.** Whenever an inspector finds any mine or colliery, or any part thereof, or any matter, thing or practice connected with such mine, which, in any respect thereof, is not covered by or provided against by any provision of this act, or by any special rule, to be dangerous or defective, or in his judgment tends to bodily injury to a person, he shall give notice thereof in writing to the owner, operator or superintendent of such mine or colliery, stating in such notice the particular matter or defect requiring remedy, and may demand that the same be remedied, but the owner, operator or superintendent of said mine or colliery shall have the right to refer the demand of the inspector to a board of arbitration, and the matter shall then be arbitrated within forty-eight (48) hours of the time such complaint or demand be made. The said board of arbitration shall be composed of three persons, one of whom shall be chosen by the inspector, one by the said owner, operator or superintendent and the third by the two thus selected, and the decision of a majority of such board shall be final and binding in the matter.

## ARTICLE XVIII.

## PENALTIES.

Ibid. Art. XVIII, § 1.

Ibid. § 3.

Trial before judge  
not a bar to indictment, etc.

Ibid. § 4.

Offenses under this  
act declared misdemeanors and penalties prescribed.

**471.** [The owner, operator, superintendent, or any person employed in or about a mine guilty of a wilful or negligent violation of this act whereby a dangerous accident has, or might have, resulted is liable to a fine of fifty dollars or three months' imprisonment.]

**472.** Nothing in this act shall prevent any person from being indicted or liable under any other act to any higher penalty or punishment than is herein provided, and if the court before whom any such proceedings is had, shall be of the opinion that proceedings ought to be taken against such persons under any other act or otherwise, he may adjourn the case to enable the proceedings to be taken.

**473.** All offenses under this act are declared to be misdemeanors, and in default of payment of any penalty or costs by the party or parties sentenced to pay the same, he or they may be imprisoned for a period not exceeding three months and not less than thirty days.

**474.** [An inspector who violates this act is guilty of a misdemeanor, and is liable to a fine of five hundred dollars and to removal from office by the sentence of the court.]

30 June, 1885, § 5.

Penalty on violation of act by any inspector.

**475.** For any injury to persons or property occasioned by any violation of this act, or any wilful failure to comply with its provisions, by any owner, operator or superintendent of any coal mine or colliery, or any other person, a right of action shall accrue to the party injured for any direct damages he may have sustained thereby, and, in case of loss of life by reason of such wilful neglect or failure aforesaid, a right of action shall accrue to the widow and lineal heirs of the person whose life shall be lost for like recovery of damages for the injury they shall have sustained.

Ibid, § 8.

Damages may be collected from owners, etc., for injuries, etc.

Right of action.

## ARTICLE XIX.

### DEFINITION OF TERMS.

**476.** In this act, unless the context otherwise requires, the term "coal mine or colliery" includes every operation and work, both under ground and above ground, used or to be used for the purpose of mining and preparing coal.

"Coal mine or colliery."

The term "workings" includes all the excavated parts of a mine, those abandoned as well as the places actually at work.

"Workings."

The term "mine" includes all underground workings and excavations and shafts, tunnels and other ways and openings; also all such shafts, slopes, tunnels and other openings in the course of being sunk or driven, together with all roads, appliances, machinery and materials connected with the same below the surface.

"Mine "

The term "shaft" means a vertical opening through the strata, and which is or may be used for the purpose of ventilation or drainage or for hoisting men or material in connection with the mining of coal.

"Shafts."

The term "slope" means any inclined way or opening used for the same purpose as a shaft.

"Slope."

The term "breaker" means the structure containing the machinery used for the preparation of coal.

"Breaker."

The term "owners" and "operators" means any person or body corporate who is the immediate proprietor, or lessee, or occupier of any coal mine or colliery, or any part thereof. The term "owner" does not include a person or body corporate who merely receive a royalty, rent

"Owners" and "Operators."

"Owner."

30 June, 1885.

or fine from a coal mine or colliery, or part thereof, or is merely the proprietor of a mine, subject to any lease, grant or license for the working or operating thereof, or is merely the owner of the soil and not interested in the minerals of the mine, or any part thereof. But any "contractor" for the working or operating of a mine or colliery, or of any part or district thereof, shall be subject to this act as an operator or owner, in like manner as if he was the owner.

"Superintendent."

The term "superintendent" means the person who shall have, on behalf of the owners, general supervision of one or more mines or collieries.

## XVII. STATE WEATHER SERVICE.

13 May, 1887, § 1  
P. L. 106.  
P. D. 2413.

Competent observers to be appointed in each county, on the recommendation of the Franklin Institute.

Duties of such observers

Secretary of Internal Affairs to furnish instruments, etc.

**477.** The Secretary of Internal Affairs of this commonwealth be and is hereby authorized and directed to name and appoint, on the recommendation of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts, one or more competent observers in each county of the state for the purpose of taking, recording and transmitting observations of the atmospheric pressure, temperature, humidity, rainfall, wind, and other meteorological phenomena, occurring in their respective localities; and the Secretary of Internal Affairs is hereby authorized and directed to purchase and furnish to each of said observers such standard meteorological instruments, as are used by the United States signal service, and such signal flags and other necessary equipments, and such necessary clerical expenses, as shall be designated and approved by the said Franklin Institute.

Ibid, § 2.

Central office to be located at Philadelphia.

**478.** The central office of the state weather service shall be located in the city of Philadelphia, at which the weather forecasts and warnings of the United States signal service shall be received, and from which the same shall be disseminated throughout the state, and to which the state weather service observers shall send their observations.

Ibid, § 3.

State weather service under charge of the Franklin Institute.

**479.** The management of the Pennsylvania state weather service shall be under the supervision and direction of the Franklin Institute of the State of Pennsylvania

for the Promotion of the Mechanic Arts, and the said Franklin Institute is hereby authorized to make such use of the information thus collected by the publication of a weather review, and by other proper means as will best promote the usefulness of the service to the citizens of the state. And the service of the said Franklin Institute and of the said observers of the state weather service shall be made without compensation.

13 May, 1887.

Information to be published.

All services to be without compensation.





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## APPENDIX "A."

## LAWS PASSED AT THE SESSION OF 1889.

- I. State Board of Health.
- II. Boards of Health for Cities of the Third Class.
- III. Issuing of Writs upon Liens by Boards of Health.
- IV. Water Supply. Sewerage. Cesspools.
- V. Practice of Veterinary Medicine and Surgery.
- VI. Protection of Employes, Women, Children. Fire-escapes.
- VII. Registration of Pharmacists. Sale of Provisions.
- VIII. Entombment in Coal Mines.
- IX. The State Weather Service.

## I. STATE BOARD OF HEALTH.

To provide for the current expenses of the State Board of Health and Vital Statistics for the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-nine, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety.

23 May, 1889.  
P. L. 344.

**480.** The following sums be and are hereby specifically appropriated to defraying the expenses of the State Board of Health and Vital Statistics for two years, namely: for the year commencing on the first day of June, Anno Domini one thousand eight hundred and eighty-nine, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety:

For salary of secretary and executive officer for two years, four thousand dollars. For employment of necessary clerical aid in the office of the board, for postage, telegrams, express charges and incidental office expenses, for traveling and other necessary expenses of the members and secretary of the board while engaged on the actual duties of the board, and for sanitary inspections control of epidemics and laboratory investigations and analyses, for two years, six thousand dollars or so much thereof as may be necessary.

\$4,000 for salary of secretary, etc.

\$6,000 for clerical aid, sundry expenses, and sanitary investigation.

Manner of expenditure.

The amounts expended from the above appropriation shall be distributed by the said board in accordance with the requirements of the sanitary service of the commonwealth and with reference to such emergencies as may

23 May, 1889.  
P. L. 273.

arise, and shall be settled with the Auditor General and State Treasurer in the usual manner.

To amend an act, entitled "An act to establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth," approved the third day of June, one thousand eight hundred and eighty-five, providing the expenses therefor.

Section 9, act of  
June 3, 1885, cited  
for amendment.

**481.** That section nine of the act, entitled "An act to establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this commonwealth," approved the third day of June, one thousand eight hundred and eighty-five, which reads as follows:

"SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill and to prepare plans and reports relative thereto; but no more than two thousand dollars shall be expended in any one year for such special sanitary service," be amended so as to read as follows:

Amendment as to  
amount of expen-  
ditures.

SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill and to prepare plans and reports relative thereto; but no more than four thousand dollars shall be expended in any one year for such special sanitary service.

Section 10, act of  
June 3, 1885, cited  
for amendment.

**482.** That section ten of the same act, which reads as follows:

"SECTION 10. It shall be the duty of said board on or before the first Monday of December in each year, to make a report in writing to the Governor of this state upon the sanitary condition and prospects of the state, and such report shall set forth the action of the said board and its officers and agents and the names thereof for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health, and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of five thousand dollars in any one year," be amended so as to read as follows:

SECTION 10. It shall be the duty of said board, on or before the first Monday of December, in each year, to make a report in writing to the Governor of this state upon the sanitary condition and prospects of the state, and such report shall set forth the action of the said board and its officers and agents and the names thereof for the past year, and may contain other useful information pertinent to the objects for which it was created, and shall suggest any further legislative action or precaution deemed proper for the better protection of life and health; and the annual report of said board shall also contain a detailed statement of the State Treasurer of all moneys paid out by or on account of said board, and a detailed statement of the manner of its expenditures during the year last past, but its total expenditures shall not exceed the sum of ten thousand dollars in one year.

23 May, 1889.  
P. L. 274.

Amendment as to  
amount of expendi-  
tures.

## II. BOARDS OF HEALTH FOR CITIES OF THE THIRD CLASS.

483. The councils of any city of the third class may, by ordinance, create a board of health as herein provided, with the powers and duties herein enumerated.

23 May, 1889.  
P. L. 306.

Board of health  
may be created.

To consist of five  
members.

484. The said board shall consist of five members, who shall serve without compensation, and none of whom shall be members of councils. At least two of their number shall be reputable physicians of not less than two years' experience in the practice of their profession. The board shall be appointed by districts to be fixed by councils, representing as equally as may be all portions of the city, and shall serve for the term of five years from the first Monday of April succeeding their appointment. The mayor shall nominate, and by and with the consent of the select council appoint the members of said board, and shall in like manner remove any or all of them for official misconduct or neglect of duty, and fill all vacancies for the unexpired term. At the first appointment the mayor shall designate one of the members to serve for one year, one to serve for two years, one to serve for three years, one to serve for four years and one to serve for five years, and thereafter one member of said board shall be appointed annually to serve for the term of five years.

Qualifications.

Districts to be  
formed.

Mayor to appoint  
with consent of  
councils.

Removals.

Vacancies.

Term of appointees.

Regular term.



23 May, 1889.  
P. 1., 307.

Members to be  
sworn.  
To organize an-  
nually.

Secretary and his  
duties.

Health officer and  
his duties.

Salaries.

Bonds.

Fees to be paid  
into city treasury.

President and sec-  
retary authorized  
administer oaths.

Ibid.

Powers and duties  
as to infectious  
diseases.

May establish hos-  
pitals.

**485.** The members of the board shall severally take and subscribe the oath herein prescribed for city officers, and shall annually organize by the choice of one of their number as president. They shall elect a secretary, not of their body, who shall keep the minutes of their proceedings and perform such others duties as may be directed by the board, and a health officer, who shall execute the orders of the board, and for that purpose the said health officer shall have and exercise the powers and authority of a policeman of the city. The secretary and health officer shall receive such salary as may be fixed by the board, and shall hold their offices during the pleasure of the board. They shall severally give bond to the city in such sums as may be fixed by ordinance, for the faithful discharge of their duties, and shall also take and subscribe the oath required of members of the board. All fees which shall be collected or received by the board, or by any officer thereof in his official capacity, shall be paid over into the city treasury monthly, together with all penalties which shall be recovered for the violation of any regulation of the board. The president and secretary shall have full power to administer oaths or affirmations in any proceeding or investigation touching the regulations of the board, but shall not be entitled to receive any fee therefor.

**486.** The said board of health shall have power and it shall be their duty, to make and enforce all needful rules and regulations to prevent the introduction and spread of infectious or contagious diseases, by the regulation of intercourse with infected places, by the arrest, separation and treatment of infected persons, and persons who shall have been exposed to any infectious or contagious disease, and by abating and removing all nuisances which they shall deem prejudicial to the public health; to enforce vaccination, to mark infected house or places, to prescribe rules for the construction and maintenance of house drains, waste and soil pipes and cesspools, and to make all such other regulations as they shall deem necessary for the preservation of the public health. They shall also have power, with the consent of councils, in case of the prevalence or apprehended prevalence of any contagious or infectious disease within the city, to establish one or more hospitals and to make provision and regulations for the management of the same. The board may

in such cases appoint as many ward or districts physicians and other sanitary agents as they may deem necessary, whose salaries shall be fixed by the board before their appointment. It shall be the duty of all physicians practicing within the city to report to the secretary of the said board of health the names and residences of all persons coming under their professional care afflicted with such contagious or infectious diseases, in the manner directed by the said board.

**487.** The said board of health shall have power, as a body or by committee, as well as the health officer, together with his subordinates, assistants and workmen, under and by order of the said board, to enter at any time upon any premises in the city upon which there is suspected to be any infectious or contagious disease, or nuisance detrimental to the public health, for the purpose of examining and abating the same; and all written orders for the removal of nuisances issued to the said health officer by order of said board, attested by the secretary, shall be executed by him and his subordinates and workmen, and the costs and expenses thereof shall be recoverable from the owner or owners of the premises from which the nuisance shall be removed, or from any person or persons causing or maintaining the same, in the manner herein provided.

**SECTION 6.** The said board of health shall have power to create and maintain a complete and accurate system for the registration of all marriages, births and deaths, which may occur within the city, and to compel obedience to the same upon the part of all physicians and other medical practitioners, clergymen, magistrates, undertakers, sextons and all other persons from whom information for such purposes may properly be required. The board shall make, and cause to be published, all necessary rules and regulations for carrying into effect the powers and functions with which they are hereby invested, which rules and regulations, when approved by the mayor, shall have the force of ordinances of the city, and all penalties for the violation thereof, as well as expenses necessarily incurred in carrying the same into effect, shall be recoverable for the use of the city, in the same manner as penalties for the violation of city ordinances, subject to the like limitation as to the amount thereof.

**488.** It shall be the duty of the board of health to submit annually to councils before the commencement of the

23 May, 1889.  
P. L. 308

Physicians and  
sanitary agents.

Duties of all prac-  
ticing physicians.

Abatement of nui-  
sances

Costs and expenses.

Registration of  
marriages, births  
and deaths.

Rules and regula-  
tions to have the  
force of ordinances

Penalties, etc.,  
how to be recov-  
ered.

Estimates for prob-  
able receipts and  
expenditures.

23 May, 1889.  
P. L. 308.  
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Appropriations.  
  
Annual report.  
  
Contents thereof  
  
Copies for State  
Board of Health

fiscal year, an estimate of the probable receipts and expenditures of the board during the ensuing year, and councils shall then proceed to make such appropriation thereto as they shall deem necessary; and the said board shall, in the month of January of each year, submit a report in writing to councils of its operations for the preceding year, with the necessary statistics thereof together with such other information or suggestions relative to the sanitary condition and requirements of the city as it may deem proper, and councils shall publish the same in their official journal. It shall also be the duty of the board to communicate to the State Board of Health copies of all its reports and publications, together with such sanitary information as may from time to time be required by said State Board

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### III. BOARDS OF HEALTH AUTHORIZED TO FILE WRITS UPON LIENS FOR WORK DONE.

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23 April, 1889.  
P. L. 48  
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Writs of *scire facias*  
and *levari facias* to  
issue for collection  
of liens.

Authorizing writs of *scire facias* and *levari facias* to be issued upon liens filed for work done, or materials furnished, by the board of health or any municipal corporation.

489. *Be it enacted, &c.*, That when a lien for work done or materials furnished by or under the authority of the board of health, or any municipal corporation, shall be authorized to be filed under any general or special act, and no process is provided for the collection of the debt, charge or assessment upon which such lien has been or may hereafter be filed, writs of *scire facias* and *levari facias* may be issued thereon, as in the case of mechanics' liens and the same costs shall be taxed.

Costs.  
  
Repeal.

SECTION 2. All laws or parts of laws inconsistent herewith be and the same are hereby repealed.

#### IV. SEWERAGE, WATER SUPPLY CESSPOOLS.

##### CITIES OF THE SECOND CLASS AUTHORIZED TO CONSTRUCT SEWERS.

###### *Sewers.*

**490.** The councils of any city of the second class may authorize the construction of sewers in any street, lane or alley, public ground or private property, the cost of which shall be assessed on the property benefited in the same manner as hereinbefore provided for the grading, paving or macadamizing of streets.

16 May, 1889  
P. L. 235

Cost of sewers to be assessed to properties benefited.

**491.** Said city shall have power, when necessary in the construction of sewers, to lay the same through private property and the damages, if any, shall be included in the assessment as part of the cost and expense of the sewer.

Sewers may be laid through private property.

**492.** The cost of engineering and all other expenses incurred by the city in opening, grading, paving and curbing of streets, or the construction of sewers, shall be assessed and collected as part of the cost of such improvements.

Cost of engineering to be included in expense of improvement.

**493.** After the final approval by councils or the court, in case of appeal of the report of the board of viewers of street improvements in grading, paving or macadamizing of any street, lane or alley, or the construction of any sewer, under or by virtue of the provisions of this act, the plot or plan, together with the report of the board of viewers, shall be handed over to the city treasurer, who, as soon as he shall have received the same, shall cause notice of the amount assessed upon each property to be given to the owner thereof, and that if the same be not paid within thirty days from the time of said notice, it will be filed as liens against said property with interest, costs and fees. If said assessments are not paid within thirty days after service of the notice aforesaid, the treasurer shall hand over to the city attorney the said plot and plan, together with the report of the board of viewers, with a list or statement of the unpaid assessments, and the city attorney shall file a lien against each property for the amount of the assessment thereon remaining unpaid within the time hereinafter prescribed, with interest

Plan and report of viewers to be given to city treasurer.

His duty as to collection of damages assessed.

Duty of the city attorney relative thereto.



23 May, 1889.  
P. L. 312

Sewerage districts.

from the time notice for payment was given and five per centum additional as attorney's fees for collection.

#### CITIES OF THE THIRD CLASS AUTHORIZED TO CONSTRUCT SEWERS.

Estimates by city engineer.

Main and local sewerage.

Councils may order construction and provide for payment.

Assessment on property abutting thereon.

Lateral sewers

Ibid. 313.

Sewerage assessments, how made.

**494.** The councils of any city of the third class may provide by ordinance for the division of said city into sewer districts, and may direct the city engineer to make an estimate of the cost and expense of constructing any main sewer, or reconstructing the same, and to report to councils what portion of said cost and expense is required for main sewerage, and what portion of the same is required for local sewerage, for any lots or lands to which any portion of such main sewer to be designated by councils, shall serve for local sewerage, and it shall be lawful for the city councils to cause sewers of all kinds to be constructed or reconstructed without petition therefor from the property owners, and to provide for the payment of such sewers from the general revenues of the city, or by assessing the cost thereof as follows, namely: In the case of main sewers, such proportion of the cost and expense of the same as is required for local sewerage shall be assessed upon the property abutting thereon, by an equal assessment by the foot front, or according to the assessed valuation of such property for purposes of city taxation, or in proportion to benefits upon lots or lands benefited by such local sewerage, as councils shall in each case determine, and the cost of such main sewer, over and above the portion thereof assessed for local sewerage, as above provided, shall be assessed upon the lots or lands within the sewer district where the work is to be done, according to the valuation of such lots or lands for city purposes, or according to benefits, or paid from the general revenues as councils may in each case determine. The cost of lateral sewers shall be assessed upon the lots or lands along or through which such lateral sewers run, according to the valuation of such lots or lands as aforesaid, or in proportion to benefits upon lots or lands benefited, or by an equal assessment by the foot front upon the lands along or through which such sewers run, as councils may determine.

**495.** If councils determine to make an assessment for main, local or lateral sewerage according to benefits, they shall appoint three disinterested citizens as viewers, who, or a majority of whom, shall assess the estimated expenses, as reported by the city engineer, of such main sewerage,

on all the lots or lands in the sewer district wherein the sewer is to be constructed or re-constructed, in proportion to benefits, and the estimated expenses, as reported by said engineer, of such local or lateral sewerage on such lots or lands as will, in their opinion, be benefited thereby, whether fronting on the ground in which the sewer is to be constructed or re-constructed or not, in proportion as nearly as may be to the benefits which may result to each lot or parcel of land.

**496.** Said viewers, or a majority of them, shall make report in writing specifying the amount assessed by them upon each lot or parcel of land for main or local sewerage separately, and file the same with the city clerk within such time as the councils shall direct. After the report is filed, councils shall cause not less than ten days' public notice to be given in two newspapers of the city, if so many be published therein, of the object of such assessments, and that the same will come before them for confirmation at a time to be specified in said notice. Objections to the assessment shall be in writing and be filed with the city clerk, and may be heard before the city councils in joint convention at the time specified in the notice. Councils may, after hearing objections, notify, set aside or confirm said assessments. If councils set aside the first or any other assessment, they may appoint other viewers of the same qualifications as hereinbefore provided, and cause new assessments to be made, and the proceedings shall be the same as herein directed in case of the first assessment.

**497.** After making assessments for sewerage of any kind, councils may direct that they be certified to the city treasurer, or to such party as said assessments may be assigned to for collection; and if such assessments be not paid within such time as councils may by ordinance prescribe, it shall be lawful to file liens therefor in the prothonotary's office of the proper county, as provided by this act, and said liens shall bear interest from the time the assessments were payable, at the rate of six per centum per annum until paid.

**498.** The city councils may provide by ordinance for the construction in any street or public highway within such city of all proper house connections and branches leading into main or lateral sewers, or connecting with gas, water, steam or other pipes in said streets or highways which they may deem necessary: *Provided*, That

23 May, 1889.  
P. L. 313.

Report to be filed  
by assessors.

Notice of filing of  
said report.

Objections to said  
report.

Assessments modi-  
fied.

Re-assessment.

Collection of such  
assessment.

Upon default lien  
to be entered.

Interest thereon.

Branch sewers and  
house connections.

23 May, 1889.  
P. L. 313.  
Extent thereof.

Costs and expenses  
thereof.

When councils may  
cause connections  
to be made.

in no case, except as a sanitary measure, of which councils shall judge, shall they require such house connections to be extended further from such sewers or from such gas, water, steam, or other pipes than to the inner line of the curbstone of such street or highway. Councils may provide for the assessment of the cost and expense of such connections upon the lots or parcels of lands for the accommodation of which such connecting branches and pipes may be constructed, or may collect the same from the owner or owners of such lot or lots, or parcels of land, by action at law, or from the persons or corporations owning or operating such gas, water, steam, or other pipes. Councils may also notify such owners to make such connections within such time as they may direct, and in default of compliance with such notice cause the said connections to be made, and collect the cost thereof from the parties owning or operating such gas, water, steam, or other pipes with interest.

#### RIGHT OF EMINENT DOMAIN BY CITIES OF THE THIRD CLASS.

Ibid, 314.  
Assessments of  
damages for public  
improvements.

If compensation  
cannot be agreed  
on.

Viewers.

Notice of the meet-  
ing of viewers.

**499.** Any city of the third class shall have power, whenever it shall be deemed necessary either in the laying out, opening, widening, extending or grading of streets, lanes or alleys, or in the erection or construction of water, gas or electric light works, slopes, embankments or sewers, or in the changing of water courses, or for any other purpose, authorized by this act to take, use, occupy or injure private lands, property or materials; and in case the compensation for the damages done or the benefits accruing therefrom have not been agreed upon, the court of common pleas of the proper county, or any law judge thereof in vacation, on application thereto by petition by said city, or by any person interested, shall appoint three discreet and disinterested freeholders of the said city as viewers, to view and ascertain the damages done, and the benefits which have accrued, by reason of the said taking, use, occupancy or injury, and shall appoint a time, not less than twenty nor more than thirty days thereafter, for said viewers to meet at or upon the premises where the damages are alleged to be sustained, or the property taken, or on the line of said street or sewer improvement, as the case may be, of which time and place ten days' notice shall be given by the petitioners to the said viewers and to all parties interested, by personal service upon the parties, their agents, attorneys or legal representatives,

by publication in one or more newspapers, or by hand-bills posted upon the premises or otherwise, as the said court shall direct, having regard to the circumstances of each case.

500. The said viewers or any two of them, having been duly sworn or affirmed faithfully, justly and impartially to decide and true report to make concerning all matters and things to be submitted to them, and in relation to which they are authorized to inquire, in pursuance of the provisions of this act, and having viewed the premises, or examined the property or materials, shall estimate and determine the quantity, quality and value of said lands so taken, occupied or injured, or to be taken, occupied or injured, or the property and materials so used or taken away, as the case may be, and having a due regard to, and making just allowance for the advantages which may have resulted, or which may seem likely to result to the owner or owners of said lands, property or materials in consequence of the making of the improvements aforesaid, for which the property or materials are to be taken, and after having made a fair and just comparison of said advantages and disadvantages, they shall estimate and determine their value, and whether any, and if any, what amount of damages has been or may be sustained, and to whom the same is payable, and after having determined the damages sustained to all the properties affected by said improvement, together with the benefits, as herein-after mentioned, they shall make report thereof to the said court.

501. The councils of said cities shall have power to provide by ordinance for the payment of damages sustained by the making of the improvements aforesaid, or by the vacation of any public highway, either by the city or by assessments upon property benefited by such improvements, and in the latter case the viewers appointed to assess damages shall also assess upon any property benefited by such improvements, whether said property be immediately adjacent thereto or in the vicinity thereof, such amount for the special advantages which may accrue to the said several properties from such improvements as they may deem proper, and shall report the same to the said court: *Provided*, That assessments for benefits shall not exceed the damages awarded or agreed upon; *And provided further*, That parties assessed for benefits shall have the same right to file exceptions to

23 May, 1889  
P. L. 314

*Ibid.* 315.

Assessment of damages.

Report to the court.

Councils to provide for payment of such damages.

Manner of making assessments.

Benefits not to exceed the damages.

Appeal.



23 May, 1889.  
P. L. 315.

Judgment on the  
award.

Collection thereof.

Expenses.

Compensation to  
viewers

In case of disagree-  
ment as to amount  
of damages, bond  
to be given.

Ibid, 316

Condition of bond.

Proceedings on re-  
fusal to accept  
bond tendered.

When to be ap-  
pointed.

said report, or to appeal therefrom, as is herein provided for in the case of assessments of damages for property taken.

**502.** If any damages be awarded, and the report be confirmed by the said court, judgment shall be entered thereon, and if the amount thereof be not paid within thirty days after the entry of such judgment, execution may then issue thereon, as in other cases of debt, for the sum so awarded, but assessments for benefits shall be collected as hereinafter provided. The costs and expenses incurred in the proceedings aforesaid shall be defrayed by the said city, and each of the said viewers shall be entitled to two dollars per day for every day necessarily employed in performance of the duties herein prescribed.

**503.** In all cases where the parties have not agreed upon the amount of damages claimed, or where, by reason of the absence or legal incapacity of the owner or owners, no such agreement can be made for lands, property or materials to be taken, occupied or injured, the city shall tender sufficient security to the party claiming or entitled to any damages, or to the attorney or agent of any person absent or to the agent or other officer of a corporation, or to the guardian or committee of any one under legal incapacity, the conditions of which shall be that the said city shall pay, or cause to be paid, such amount of damages as the party shall be entitled to receive after the same shall have been agreed upon by the parties, or assessed in the manner provided for by this act: *Provided*, That in case the party or parties claiming damages refuse, or do not accept the security so tendered, the said city shall then give the party, his or their agent, attorney or other officer a written notice of the time when the same will be presented for filing in the court, and thereafter the said city may present said security to the court of common pleas of the county where the lands or other property is situated, and, if approved, the security shall be filed in said court for the benefit of those interested, and recovery may be had thereon for the amount of damages assessed, if the same be not paid, or cannot be made by execution on the judgment in the issue formed to try the question.

**504.** The viewers provided for in the foregoing sections of this article may be appointed before, or at any time within six years after the entry, taking, appropriation or

injury of any property or materials for constructing said improvements, and upon the report of said viewers or any two of them, being filed in said court, any party may within thirty days thereafter file his, her or their appeal from said report to said court. Such appeal shall be in writing, and accompanied by an affidavit of the appellants or their agent or attorney, that the same is not taken for the purpose of delay, but because the affiant firmly believes that injustice has been done, and after such appeal either party may put the cause at issue in the form directed by said court, and the same shall be tried by said court and a jury, and after final judgment either party may have a writ of error therefrom to the supreme court in the manner prescribed in other cases. The said court of common pleas shall have power to order what notices shall be given in connection with any part of the proceedings, and may make all such orders as it may deem requisite. If any exceptions be filed with any appeal to the proceedings, they shall be speedily disposed of, and if allowed, a new view shall be ordered, and if disallowed, the appeal shall proceed as hereinbefore provided.

**505.** In case any such city shall repeal any ordinance passed, or discontinue any proceeding taken, providing for any of the improvements mentioned in the first section of this article, prior to the entry upon, taking, appropriation or injury to any property or materials, and within thirty days after the filing of the report of viewers assessing damages and benefits, the said city shall not thereafter be liable to pay any damages which have been or might have been assessed, but all costs upon any proceeding had thereon shall be paid by said city.

**506.** In all cases where lands or property have been heretofore taken, used, occupied or appropriated for any of the purposes aforesaid within five years last past, or where any ordinance has been passed providing for such taking, using or occupancy, and the damages sustained thereby or the benefits accruing therefrom have not yet been legally determined, it shall be lawful to proceed and determine said damages and benefits and collect the same under the provisions of this article, with the same effect as if said improvements had been undertaken or proceeded in after the passage of this act.

23 May, 1889,  
P. L. 316.

Appeal from report  
of viewers.

Affidavit.

Trial by jury.

Notices.

Exceptions.

Ibld. 317.

Liability of city for  
damages in case of  
repeal of ordinance,  
etc., after assess-  
ment of damages.

Costs.

Damages for lands  
heretofore occu-  
pied and used.

## BOROUGHs AUTHORIZED TO CONSTRUCT SEWERS.

To enable boroughs to adopt and construct sewage systems and to assess and collect the cost thereof.

15 May, 1889.  
P. L. 220.

Burgess and town council may adopt sewage system.

507. The burgess and town council of any borough within this commonwealth, now or hereafter to be incorporated, and upon a petition of a majority of the property owners on any street or streets in any said borough, shall have full power and authority by ordinance or ordinances duly passed, to adopt and construct such system or systems of public sewerage, as in the judgment of the said council may be necessary from time to time, for the disposal of the waste water and other sewage matter from the said borough; and for this purpose the said burgess and councils shall have full power to fix the place or places in and along the streets, lanes, alleys, courts or highways in said borough, where sewer mains or drains and branches thereof shall be laid down, and to prescribe the manner in which they shall be constructed.

May assess the cost thereof on adjoining properties.

508. Whenever any borough shall determine to construct any public sewer, it shall have power, by ordinance or ordinances duly passed, to assess the cost thereof as a sewage tax upon the property adjoining or adjacent to the same, either by the foot front or in such other manner and in such proportions and amounts as to the burgess and town council may seem just and equitable, which assessment of sewerage tax, duly certified under the seal of the said borough, attested by the burgess or the president of council and clerk thereof, shall be collectible from the owner of such property as debts of like amount are now by law collectible, and such certificates of assessment shall be *prima facie* evidence in any suit for recovering the same, of the correctness and validity thereof: *Provided*, That nothing in this act shall provent the construction of any public sewer and the payment of the same by general taxation, when the same is for the general health and public welfare of said borough.

How assessment to be collected.

May pay therefor by general taxation.

When property owners fail to pay claim may be filed in common pleas.

509. If the owners or owner of any property against which an assessment for sewerage tax has been laid, as provided for in the preceding section, shall fail or refuse to pay such assessment within sixty days after having notice of the same, it shall be lawful for the said borough, in its corporate name, to immediately file a claim therefor in the court of the common pleas of the proper county, against the property upon which said assessment is laid, which claim shall set forth the name of the then owner

or reputed owner of the property and a sufficient description of the property to identify it with the amount of the assessment, and shall be indexed as mechanics' or municipal claims are in the said court. And from the time of filing such claim it shall be and remain a lien upon the property described therein, prior to all others thereafter attaching thereto, for the period of five years; and said lien shall be collectible, with interest from the date of filing, and costs, in the same manner as mechanics' are collectible in this commonwealth.

510. The burgess and town council of any borough, upon adopting and proceeding to construct a system of public sewerage, shall have full power and authority by ordinance or ordinances duly passed to provide for and regulate the manner in which, and the terms upon which, connections herewith by property owners may be made, and whenever the said borough shall deem it necessary and proper for the preservation of the public health or for other cause, either upon the report of any health committee or board of health or otherwise, that any property owner should connect his or her premises with the public sewer, for the purpose of having the fecal matter and other wastes therefrom discharged into such sewer, the burgess and town council thereof shall have power to compel such connection to be made whenever such property abuts upon or is within fifty feet of a sewer main or branch thereof, in the same manner and under the same regulations as other connections with said sewer are made. And if any property owner, after sixty days' notice so to do by resolution of the said council, shall refuse to have his premises so connected, it shall be lawful for the said burgess and council to enter upon said premises and have the same done and to collect the cost thereof as a sewerage tax from such property owner, either by personal action or by lien against the premises, in the same manner as is hereinbefore provided for the collection of other sewerage tax. The said council shall also have power to enforce, by appropriate penalties, such regulations as it may ordain with reference to the proper use, connection with and maintenance of such sewerage system.

511. To effectually carry out the foregoing provisions of this act, the burgess and town council of any borough shall have full power to do and ordain whatever may be necessary in order to secure a proper and safe disposal of the sewage from any borough; and for this purpose

15 May, 1889.  
P. L. 221

What claim shall  
set forth.  
To be indexed.

A prior lien of five  
years.

How collectible.

Regulation of con-  
nections with sew-  
age system.

In case of refusal  
to connect proper-  
ties therewith.

Penalties.

Further powers of  
burgess and town  
council.



15 May, 1889.  
P. L. 221.

May extend mains  
beyond borough  
limits.

Ibid, 222.

May enter upon  
highways and on  
private lands.

Notice to land  
owners.

Damages to be first  
secured.

How damages to be  
assessed.

it shall be lawful for the said burgess and town council to extend the necessary sewer mains or outlets beyond the limits of such borough, to the point or points where such sewage is to be deposited, and the said borough by its agents, engineers and workmen, shall have full power to enter upon and construct such mains or outlets in and along any public highway, or in and across any private lands, at such place or places and in such manner as shall, by ordinance be directed, and likewise to enter upon, condemn and take such lands, property or materials, for the construction of all sewer mains or outlets and works as may be necessary for the disposal of such sewage: *Provided however*, That no borough ordinance, for the construction of any sewer beyond borough limits, or works connected therewith, shall be adopted until notice thereof has been given, by the publication of the proposed ordinance at length for at least four weeks, in not less than one newspaper published in said borough or in the county in which said borough is situate, and also by having copies of such proposed ordinance served upon all the land owners through whose land such sewer is to pass, at least ten days before final action thereon.

512. Before any entry shall be made upon private property, without the owner's consent, for the purpose of laying down any sewer or outlet therefrom or constructing works connected therewith, as provided for in the preceding section, security for all damages which may be done thereby shall first be given to such owner, in such form and in such amount as a court of common pleas of the proper county may direct, and all damages caused by the construction of any such sewer, or sewer works, or by the taking of lands and materials therefor, shall be ascertained in the same manner as damages for the taking of lands for railroad purposes are now ascertained in this commonwealth and shall be paid out of the borough treasury.

#### CITIES OF THE THIRD CLASS AUTHORIZED TO ESTABLISH WATER AND LIGHTING DEPARTMENTS.

513. The councils of any city of the third class are hereby authorized and empowered to purchase, for such price as may be agreed upon by the councils of the city and a majority of the stockholders of the company, all the real, personal and mixed estate of any water, gas or electric light company or companies in such city, or adjacent thereto, and thereupon the said city shall possess and

23 May, 1889.  
P. L. 308.

exercise all the rights, powers, privileges and franchises by law belonging or pertaining to such company or companies and may take and appropriate any stream or streams of water, spring or springs, lands, tenements, hereditaments, property and materials, near or accessible to such city, which may be necessary for the erection and maintenance of water, gas or electric light works, and for the supplying of said city with water or light, and may enter into and upon any lands, enclosures, streets or highways to procure materials for the construction of said works, doing as little damage as possible to property, and making compensation to the owner or owners of all species of property taken, appropriated or injured by them for the purpose aforesaid, as herein provided; but the powers granted by this section shall not be exercised by councils until authority so to do shall have been given them by a majority of the voters of such city, at a special election held for that purpose, of which election the mayor shall give notice as provided for in municipal elections.

23 May, 1889.  
P. L. 300.

Compensation

Powers granted in this section to be exercised only after an election thereon.

**514.** Any city which now has the title to any water, gas or electric light works, by conveyance to the same in its corporate name, or which may hereafter erect or purchase water, gas or electric light works under the provisions of this act, are hereby empowered to create a department to be called the water and lighting department, and for the organization and government of the same the councils are hereby authorized and empowered to divide the city into three districts for the election of a board of commissioners, which districts shall be numbered one, two and three; one commissioner to be chosen from each respective district, of which he shall be a resident at the time of his election, and no member of councils, or person holding any city office, shall be eligible as a member of said board.

Water and lighting department to be establishment

Districts to be formed.

Commissioners to be elected.

**515.** The councils of such city creating such department as aforesaid, may on the second Monday of April, or within thirty days thereafter, in joint convention, elect one person from each of said districts, as a member of the board of commissioners of the water and lighting department; and at the first election each member of councils shall vote for but two commissioners, and the three persons, being one from each of said districts, having the highest number of votes shall be declared elected. The commissioners so elected shall serve for the term of one, two and three years respectively, to be computed from

Election of commissioners.

Term of service

|                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23 May, 1889.<br>P. L. 309.                            | the date of election, and until their successors are duly elected and qualified. The term of each shall be determined by lot at the first meeting of the board, and thereafter, on the second Monday of April of each year, or within thirty days thereafter, the councils shall, in joint convention, elect one commissioner to serve for the term of three years.                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Regular term.                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Compensation.                                          | 516. The members of the board of commissioners created as aforesaid, shall receive such compensation for their services as may be provided by ordinance. Before entering upon their respective duties they shall take and subscribe the oath herein prescribed for city officers, and they shall be removable by councils for misdemeanor in office or neglect of duty ; and all vacancies occurring in the board shall be filled by councils for the unexpired term.                                                                                                                                                                                                                                                                                                                                       |
| To be sworn                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Renovals                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Ibid, 310                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Their powers and duties.                               | 517. It shall be the duty of the board to take charge of the water and lighting department so created as aforesaid, and by their sole authority to employ and dismiss at pleasure a superintendent and a clerk, who shall be secretary of the board, whose compensation shall be fixed by councils, and to employ such laborers, mechanics and workmen as they may deem necessary for the economical and efficient administration of said department. They shall purchase such materials and supplies as may be required for keeping the works in good repair, and have charge and control of all constructions, repairs, enlargements and extensions of the works, and shall conduct and manage the affairs and business of the department in accordance with law and the directions of the city councils. |
| Superintendent.<br>Clerk, his duties and compensation. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Supervision of works.                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Estimates of improvements.                             | 518. The said board of commissioners so created shall, whenever called upon by councils, make and submit to them full estimates of the cost, charges and expenses of any new work, enlargement, extension of water or lighting supply, or alteration which councils may contemplate making relative to said works ; and said board may, at any time, submit to councils any suggestions and estimates they may see proper to make touching the improvement, extension or enlargement of said works, but no new construction, re-construction, extension, supply of water or light, or enlargement of said works shall be undertaken by said commissioners so created, or materials or supplies be purchased therefor, without the previous consent and direction of councils.                               |
| Suggestions as to improvements.                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| No improvements without consent of councils.           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**519.** Whenever an extension of a supply of water or light to portions of the city not previously supplied shall be made by the said commissioners so created, they shall make out a full statement of the number of feet of main pipes laid or extended through any of the streets of the city in which main pipes were not laid before the said extension, and shall file the same in the department; and it shall be the duty of the clerk of said department, forthwith, on receipt of said statement, to make out a list of all owners of houses, lots and buildings on each side of the street through which said pipes are extended, and to charge said owners, and each of them, for each and every house, lot or building so situated in said streets, at such rate per foot as the city councils may by ordinance fix, for said mains extending along the front of their respective houses, lots and buildings: *Provided*, That nothing herein contained shall be construed to prevent the councils from providing for the payment of water and gas pipes by the city.

23 May, 1889.  
P. L. 310.

Duties as to extension of works.

Rate per foot to be charged against owners of houses, etc., on each side of the street

Extensions may be made at cost of city.

**520.** Said charge shall be called the frontage water tax, or lighting tax, as the case may be, and shall be collected and recovered in the manner provided by this act for the recovery of municipal claims. And whenever any pipes for the conveyance of water or light shall be laid in any of the streets or highways within such city, the owners of the ground in front of which the same shall be laid shall pay for the expense thereof such sum for each foot of the front of their ground upon such street as the city council may by ordinance direct: *Provided*, That in all corner lots an allowance shall be made of one-third the length of their front, but such allowance shall be always and only on the streets or highway having the longest front and in case both fronts are of equal dimensions, the allowance shall be made in the street in which the pipes shall be last laid, but in no case shall the allowance exceed sixty feet on any corner lot: *And provided further*, That when a corner lot shall have erected upon it two or more separate tenements, there shall only be an allowance made equal to one-third of the depth of the corner tenement and the yard adjoining: *And provided also*, That the provisions of this and the foregoing section shall not apply to any lot or piece of ground in such city upon which there may be a supply of water or gas obtained from any other source whatever; but if at any time the owner of such lot or piece of ground shall desire to obtain

Collection of frontage water and light tax.

Expense of laying pipes in streets.

Ibid. 311.



23 May, 1889.  
P. L. 311.

a supply of water or gas from the works of such city, then and in that case, the provisions of this section shall first be complied with.

521. The said commissioners so created shall have power, by and with the approval of councils, to fix the water and lighting rates, and the quantity to be used, and for that purpose they shall, on the first Monday of March in each year, establish the rates for the succeeding year, which rates shall be submitted by them to councils for their approval, and when approved, such rates shall not be changed for and during the year, but if not approved, the existing rates shall continue until modified by the commissioners with the approval of councils.

522. The city councils shall provide by ordinance for the collection of all the lighting and water rates that may accrue from time to time, to the said city, for the use of the water or light, fixing the time when such rates shall be payable, and the penalties for non-payment thereof; and such rates shall be charged to the respective owners of the real estate on which such water or light is used, and if the same shall not be paid in accordance with the provisions of such ordinance, claims for the amounts due shall be registered in the city lien docket in the same manner as is herein provided in the case of unpaid city taxes on real estate, with the like force and effect as to the lien thereof.

523. The said commissioners created as aforesaid shall, annually, at a stated meeting of councils in the month of January, report to said councils a full statement of all the repairs, alterations, re-constructions, new constructions, expenditures and everything relating to the management and cost to the city of maintaining the said works. The treasurer of the city shall keep his accounts in such manner as to show in his monthly report, distinctly and separately, the entire amount of revenue realized during each month from the water and lighting departments of said city respectively; and the revenues derived from the said water and lighting departments shall be applied exclusively to the purposes of said departments respectively, and the surplus, if any, to the reduction of the debt thereof.

524. The city councils shall pass such ordinances, rules and regulations as may be necessary for carrying into effect the provisions of this article, not inconsistent with

this act, and may impose fines and penalties for the violation of such ordinances, rules and regulations, recoverable in the manner hereinbefore provided for the recovery of fines and penalties for the violation of other city ordinances, and subject to the limitation as to the amount thereof.

23 May, 1889.  
P. L. 312.

#### WATER COMPANIES AUTHORIZED TO CONDEMN RIGHTS AND PROPERTY.

**525.** The ninth paragraph of the second class, title corporations for profit, of the second section of the act, entitled "An act to provide for the incorporation and regulation of certain corporations," approved April twenty-ninth, one thousand eight hundred and seventy-four which reads as follows:

16 May, 1889  
P. L. 226.

"IX. The supply of water to the public," shall be amended so as to read as follows:

IX. The supply of water to the public, or the supply, storage or transportation of water and water power for commercial and manufacturing purposes.

Paragraph 9, second clause, section 2, act of April 29, 1874, cited for amendment.

**526.** That clause two, of section thirty-four, of said act of April twenty-ninth, one thousand eight hundred and seventy-four, which reads as follows:

Amendment.

"Where such company shall be incorporated for the supply of water, they shall have power to provide, erect and maintain all works and machinery necessary or proper for raising and introducing into the town, borough, city or district where they may be located, a sufficient supply of pure water, and for that purpose may provide, erect and maintain all proper buildings, cisterns, reservoirs, pipes and conduits, for the reception and conveyance of water; and they are authorized and empowered by themselves, their agents, engineers and workmen, and with their tools, carts, wagons, beasts of draught or burden, to enter upon such lands and enclosures, streets, lanes and alleys, roads, highways and bridges, as may be necessary to occupy, or obtain materials for construction of said works, and to occupy, ditch and lay pipes through the same, and the same from time to time to repair, subject to such regulations in regard to streets, roads, lanes and other highways, as is provided in the foregoing section for gas companies; and if any injury be done to private property, the said company shall make compensation therefor in the manner provided in the forty-first section

Clause 2, section 34, same act, cited for amendment.

16 May, 1889.  
P. L. 226.

Amendment.

of this act," shall be and the same is hereby amended so as to read as follows:

Where such companies shall be incorporated for the supply of water to the public, or for storing and transportation or supply of water and water power for commercial and manufacturing purposes, they shall have power to provide, erect and maintain all works and machinery necessary or proper for raising and introducing into the town, borough, city or district where they may be located a sufficient supply of water, or water and water power as aforesaid, and for that purpose may provide, erect and maintain all proper buildings, cisterns, reservoirs, pipes and conduits, for the reception and conveyance of water, or water power, and it shall have power to appropriate so much of the water from the rivers, creeks, canal water-rights and easements, within or without the limits of the city, borough or place in which said company may by its charter be located, as may be necessary for its purposes, and all damage done thereby shall be ascertained, recovered and paid as provided for in the forty-first section of the act to which this is a supplement; and it is further authorized and empowered by itself, its agents, engineers and workmen, and with its and their tools, carts, wagons, beasts of draught or burden, to enter upon such lands and enclosures, streets, lanes, alleys, roads and highways and bridges, as may be necessary to occupy or to obtain materials for the construction of said works, and to occupy, ditch and lay pipes through the same, and the same from time to time to repair, subject to such regulations in regard to streets, roads, lanes and other highways, and impairing the free use thereof as little as possible, and subject to such regulations as the councils of said borough, town, city or district may adopt in regard to grades or for the protection and convenience of public travel over the same, and if any injury be done to private property the said company shall make compensation therefor in the manner provided for in the forty-first section of this act: *Provided*, That this act shall not apply to private spring or private water supplies.

PERMITS FOR THE EMPTYING OR REMOVING OF THE CONTENTS  
OF PRIVY WELLS OR CESSPOOLS, IN CITIES OF THE SECOND  
CLASS.

527. From and after the passage of this act, the price or fee for a permit to clean or empty any privy well or cesspool, in any city of the second class in this commonwealth, and to remove and carry away the contents thereof, shall be fifty cents; the same to be paid by the party applying for said permit to the bureau of health of said cities at the time the application for said permit is made.

SECTION 2. All acts or parts of acts inconsistent herewith be and the same are hereby repealed.

23 April, 1889.  
P. L. 49.

Fee for permit.

To be paid to the  
bureau of health.

Repeal

V. THE PRACTICE OF VETERINARY MEDICINE AND SURGERY.

528. Every person who shall assume or use, or cause to be used, any title pertaining to the practice of veterinary medicine or surgery, or any of the branches of veterinary medicine or surgery, shall be a graduate of a legally chartered veterinary college or university having the power or authority to confer the degree of veterinary surgeon or analogous title, except as provided for in section two. And such practitioner shall be required to register in the book kept for that purpose, in the office of the prothonotary of the county in which he resides.

529. Any person who has assumed the title of veterinary surgeon or analogous title in this commonwealth for the five years preceding the passage of this act, without being entitled to the degree of veterinary surgeon or analogous title, shall be allowed to continue the use of the title; but such person shall appear before the prothonotary of the county in which he resides and make affidavit of that fact; he shall then be recorded as an existing practitioner.

530. The prothonotary shall purchase a book of suitable size, to be known as the Veterinary Medical Register of the county, and shall set apart one full page for the registration of each practitioner; and when any practitioner shall die or remove from the county, the prothonotary shall make a note of the same, and shall perform such other duties as are required by this act.

11 April, 1889.  
P. L. 28.

Practitioners of  
veterinary medi-  
cine or surgery  
must be graduates  
of legally chartered  
veterinary colleges.

To register in pro-  
thonotary's office.

Practitioners of five  
years' standing al-  
lowed to continue.

To make affidavit  
and register

Prothonotary to  
provide Veterinary  
Medical Register.

To note deaths and  
removals.



11 April, 1889.  
P. L. 28.

Fees

Prothonotary to  
give receipt.  
Registry to be made  
within six months.

Who are subject to  
this act.

Ibid, 29.

Practitioners hold-  
ing diplomas issued  
outside of this state  
to make affidavit  
and register.

Violation of this act  
declared to be a  
misdemeanor.

Penalty.

**531.** Every practitioner, who shall be admitted to register, shall pay to the prothonotary the sum of one dollar, which sum shall be compensation in full for registration. The prothonotary shall give a receipt for the same, and such registration shall take place within six months from the passage of this act.

**532.** Nothing in this act shall be so construed as to prevent any veterinary surgeon (if legally qualified to use the title) from using the title veterinary surgeon or analogous title in this commonwealth; but if such veterinary surgeon opens an office, or uses the title for the transaction of business, he shall be deemed a sojourner, and shall conform to the requirements of this act.

**533.** Any person who may desire to commence the practice of veterinary surgery or medicine, or any of its branches, in this state after the passage of this act, and who holds a veterinary diploma issued or purporting to have been issued by any veterinary college or university in this state, another state or foreign country, shall make affidavit before the prothonotary that his diploma has been regularly issued by a legally chartered veterinary college or university, after which such person will be allowed to register, as provided for in this act.

**534.** Any person who shall present to a prothonotary a veterinary diploma which has been obtained fraudulently, or which is in whole or in part a forgery, or shall make affidavit to any false statement intended to be filed or registered, or shall use the title of veterinary surgeon or analogous title, without conforming to the requirements of this act, or shall otherwise violate or neglect to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor, and on conviction shall be punished for each and every offense by a fine not exceeding one hundred dollars.

#### CONTAGIOUS DISEASES AMONG DOMESTIC ANIMALS.

9 May, 1889.  
P. L. 151.

Duties and powers  
of secretary of  
State Board of Ag-  
riculture.

Quarantine.

**535.** When it shall be brought to the notice of the secretary of the State Board of Agriculture, that any contagious disease, not otherwise provided for by law, prevails among domestic animals, he may take such measures to prevent its spread as may be deemed expedient, and for this purpose shall have power to place infected animals, herds, buildings and farms in quarantine, and to prevent the movement of animals or objects likely to convey the contagion, except upon proper permits,

and, with the consent and approval of the Governor, to make such rules and regulations for the government of such quarantine as may be deemed necessary to effectively carry out the purpose of this act.

9 May, 1889.  
P. L. 151.  
Rules and regula-  
tions.

**536.** That any person or persons who shall wilfully or intentionally interfere with any officer or officers, duly authorized to carry out the provisions of this act, or who shall wilfully or intentionally violate the provisions of the quarantine authorized by section one of this act, shall be deemed guilty of a misdemeanor, and upon conviction shall be liable to an imprisonment not exceeding three months, or a fine not exceeding one hundred dollars, or both, at the discretion of the court.

Violation of this  
act a misdemeanor

**537.** That when it shall be necessary or expedient to kill any animal or animals to prevent the spread of contagious disease, it, or they, shall first be appraised by sworn appraisers, who shall have due consideration for the actual condition of the animal or animals, at the time of appraisement, and the owner or owners shall be entitled to receive from the secretary of the State Board of Agriculture a certificate of value, which may be paid from current appropriations or by a subsequent appropriation by the legislature: *Provided*, That the amount of such certificates issued in any one year, shall not exceed the sum of twenty-five hundred dollars.

Penalty.

Appraisement of  
and compensation  
for animals killed.

Certificate of value.

Certificates not to  
exceed \$2,500 in one  
year.

**538.** That for the economical eradication of contagious diseases of domestic animals, the secretary of the State Board of Agriculture shall have power, with the consent and approval of the Governor, to arrange for and carry into effect, terms of co-operation with the proper officers of the National Government.

Ibid, 152.

Co-operation with  
officers of national  
government.

**539.** That all acts or parts of acts inconsistent herewith are hereby repealed.

Repeal.

## VI. PROTECTION OF EMPLOYES—WOMEN—CHILDREN—FIRE-ESCAPES.

### THE SAFETY OF WOMEN AND CHILDREN IN MERCANTILE INDUSTRIES AND MANUFACTURING ESTABLISHMENTS.

**540.** No minor shall be employed at labor in factories or any manufacturing establishment or mercantile industry in this state, for a longer period than sixty hours in any week, unless for the purpose of making necessary repairs

20 May, 1889.  
P L 243.  
Employment of  
minors

20 May, 1889,  
P. L. 243.

Children under 12  
years of age not to  
be employed.

Register to be kept.

Affidavit of parent.

Affidavit of child.

Notice as to hours  
of employment,  
etc., to be posted.

Ibid, 244

What shall be  
deemed a factory,  
etc.

Governor to ap-  
point a factory in-  
spector.

His duties

**541.** No child under twelve years of age shall be employed in any factory, manufacturing or mercantile establishment within this state. It shall be the duty of every person so employing children to keep a register, in which shall be recorded the name, birth-place, age and place of residence of every person so employed by him under the age of sixteen years. And it shall be unlawful for any factory, manufacturing or mercantile establishment to hire or employ any child under the age of sixteen years, without there is first provided and placed on file an affidavit made by the parent or guardian, stating the age, date and place of birth of said child. If said child have no parent or guardian then such affidavit shall be made by the child, which affidavit shall be kept on file by the employer, and which said register and affidavit shall be produced for inspection on demand by the inspector or any of the deputies appointed under this act.

**542.** Every person, firm or corporation employing women and children or either in any factory, manufacturing or mercantile establishment, shall post and keep posted, in a conspicuous place in every room where such help is employed, a printed notice stating the number of hours per day for each day of the week required of such persons, and in every room where children under sixteen years of age are employed a list of their names with their age.

**543.** No person, firm or corporation employing less than ten persons who are women or children shall be deemed a factory, manufacturing or mercantile establishment within the meaning of this act.

**544.** The Governor shall, immediately after the passage of this act, appoint, with the advice and consent of the Senate, a factory inspector, at a salary of fifteen hundred dollars per year, whose term of office shall be three years. The said inspector shall be empowered to visit and inspect, at all reasonable hours and as often as practicable, the factories, work shops and other establishments in the state employing women or children, where the manufacture of goods is carried on, and to report to the bureau of labor statistics of this state, on or before the thirteenth day of November of each year, the name of the factory, the number of such hands employed and the number of hours work performed each week. It shall also be the duties of said inspector to enforce the provisions of this act and to prosecute all violations of the same before any

magistrate or any court of competent jurisdiction in the state.

**545.** All necessary expenses incurred by said inspector in the discharge of his duty shall be paid from the funds of the state, upon the presentation of proper vouchers for the same: *Provided*, That not more than twenty-five hundred dollars shall be expended by him therefor in any one year.

**546.** It shall be the duty of the owner, agent or lessee of any such factory, manufacturing or mercantile establishment, where hoisting-shafts or well-holes are used, to cause the same to be properly and substantially enclosed or secured if in the opinion of the inspector it is necessary to protect the life or limbs of those employed in such establishments. It shall be the duty of the owners, agent or lessee to provide or cause to be provided such proper trap or automatic doors, so fastened in or at all elevator ways as to form a substantial surface when closed and so constructed as to open and close by action of the elevator in its passage either ascending or descending.

**547.** It shall also be the duty of the owner of such factory, mercantile industry or manufacturing establishment, or his agent, superintendent or other person in charge of the same, to furnish and supply or cause to be furnished and supplied, in the discretion of the inspector, where dangerous machinery is in use, automatic shifters or other mechanical contrivance for the purpose of throwing on or off belts or pulleys, And no minor under sixteen years of age shall be allowed to clean machinery while in motion. All gearing and belting shall be provided with proper safeguard.

**548.** It shall be the duty of the owner or superintendent to report, in writing, to the factory inspector all fatal accidents or serious injury done to any person employed in such factory, within forty-eight hours, stating as fully as possible the cause of such injury.

**549.** A suitable and proper wash room and water closets shall be provided for females where employed, and the water closets used by females shall be separate and apart from those used by males, and shall be properly screened and ventilated and at all times kept in a clean condition.

**550.** Not less than forty-five minutes shall be allowed for the noonday meal in any manufacturing establishment in this state. The factory inspector, his assistant or any of his deputies shall have power to issue permits

20 May, 1889.  
P. L. 244.

His expenses to be paid by state.

Not to exceed \$2,500, a year.

Well-holes to be secured and trap doors applied thereto.

Automatic shifters to be used.

Cleaning machinery in motion.

Other safeguards.

Fatal or serious injury to be reported

Ibid. 245.

Separate wash rooms and water closets for female employees

Forty-five minutes time for noon meal

Exceptions.



20 May, 1889,  
P. L. 245.

Changes and safe-  
guards, which must  
be made within  
sixty days after  
notice from inspec-  
tor.

The factory inspec-  
tor may appoint  
deputies.

Their duties.

Expenses of depu-  
ties.

Their salaries

in special cases, allowing a shorter meal time at noon, and such permit must be conspicuously posted in the main entrance of the establishment, and such permit may be revoked at any time the inspector deems necessary and shall only be given where good cause can be shown.

551. That if the inspector of factories find that the heating, lighting, ventilation or sanitary arrangement of any shop or factory is such as to be injurious to the health of persons employed therein, or that the means of egress in case of fire or other disaster is not sufficient or in accordance with all the requirements of the law, or that the belting, shafting, gearing, elevators, drums and machinery in shops and factories are located so as to be dangerous to employes and not sufficiently guarded, or that the vats, pans or structures filled with molten metal or hot liquid are not surrounded with proper safe guards for preventing accident or injury to those employed at or near them, he shall notify the proprietor of such factory or work shop to make the alterations or additions necessary within sixty days, and if such alterations or additions are not made within sixty days from the date of such notice, or within such time as said alterations can be made with proper diligence upon the part of said proprietors, said proprietors or agents shall be deemed guilty of violating the provisions of this act.

552. The factory inspector now or hereafter appointed under or by virtue of the provisions of this law, is hereby authorized to appoint such number of persons as in his judgment may be necessary, not exceeding six, one-half of whom shall be females, who shall be known as deputy factory inspectors, either or any one of whom may be appointed to act as clerk in the main office, and whose duties it shall be to enforce the provisions of this act and of the several acts relating to factories and manufacturing establishments. The powers of said deputies shall be the same as the powers of the factory inspector, subject to the supervision and direction of the factory inspector.

553. The traveling expenses of each of said deputies shall be approved by the inspector and audited by the Auditor General of the state before payment, and said deputy inspectors shall have an annual salary of one thousand dollars, to be paid monthly by the treasurer of the state out of any moneys not otherwise appropriated.

**554.** Said factory inspector shall have power to divide the state into districts and to assign one of said deputies to each district, and may transfer any of the deputies to other districts in case the best interests of the state require it. The inspector shall have the power of removing any of the deputy inspectors at any time.

20 May, 1889.  
P. L. 246.

State may be districted.

Control of factory inspector over deputies.

**555.** An office shall be furnished in the capitol as soon as practicable, which shall be set apart for the use of the factory inspector. The factory inspector and his deputies shall have the same power to administer oaths or affirmations as is now given to notaries public, in cases where persons desire to verify documents connected with the proper enforcement of this act.

Inspector's office.

He and his deputies may administer oaths.

**556.** Any person who violates any of the provisions of this act, or who suffers or permits any child or females to be employed in violation of its provisions, shall be deemed guilty of a misdemeanor and on conviction shall be punished by a fine of not more than five hundred dollars.

Violation of this act a misdemeanor.

Penalty.

**557.** A printed copy of this act shall be posted by the inspector in each work room of every factory, manufacturing or mercantile house where persons are employed who are affected by the provisions of this act.

Copy of this act to be posted.

**558.** All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

Repeal.

#### BETTER SECURITY OF LIFE AND LIMB IN CASES OF FIRE IN HOTELS AND OTHER BUILDINGS.

**559.** That portion of section one of the act, approved the third day of June, Anno Domini one thousand eight hundred and eighty-five, which reads as follows:

9 May, 1889.  
P. L. 169.

"SECTION 1. That in addition to the means of escape required in section one of the act to which this is a supplement, it shall be the duty of the owner or owners, in fee or for life, of every building constructed more than two stories high and used or intended to be used as a hotel, factory, manufactory, work shop, tenement house, school, seminary, college, academy, hospital, asylum, hall or place of amusement, and of the trustee or trustees of every estate, association, society, college, academy, hospital or asylum, owning or using any building constructed more than two stories high, and used or intended to be used for any of said purposes, and of the board of education, or board of school directors, having charge of any building constructed more than two stories high, and used or

Section 1, act of June 1, 1887, cited for amendment.

9 May, 1889.  
P. L. 169.

Ibid., 170.

intended to be used as a public school, to provide and cause to be securely affixed to a bolt through the wall over the window head inside of at least one window, in each room, on the third floor, and in each room on each higher floor of every such building, a chain at least ten feet in length with a rope at least one inch in diameter securely attached thereto of sufficient length to extend to the ground, or such other appliances as may be approved by the board of fire commissioners of any city or county having a board of fire commissioners, or by the county commissioners of any county where there is no board of fire commissioners: *Provided however*, That when the third floor, or any higher floor, of any such building is not sub-divided into rooms, then at least six windows on each of such floors shall be provided with such chains and ropes, or such other appliances as may be approved by any board of fire commissioners, or by the county commissioners of any county where no board of fire commissioners shall exist: *And provided further*, That whenever any room on the third floor, or on any higher floor, of any such building shall contain more than three windows, then at least one window, out of every three windows, in every such room, shall be provided with such chain and rope or such other appliance as may be approved by any board of fire commissioners, or by the county commissioners of any county having no board of fire commissioners. And each of such ropes shall be coiled and kept in an unlocked box in an unobstructed place, near the inside sill of the window to which such rope is attached. And in all hotels, factories, manufactories, work shops, schools, seminaries, colleges, hospitals, asylums, halls or places of amusement, or other places mentioned in this act, the hallways and stairways shall be properly lighted at night, and at the head and foot of each flight of stairs, and at the intersection of all hallways with main corridors, shall be kept during the night a red light; and one or more proper alarms or gongs capable of being heard throughout the building shall always remain easy of access and ready for use in each of said buildings to give notice to the inmates in case of fire. And every keeper of such hotel, factory, manufactory, work shop, school, seminary, college, hospital, asylum, hall or place of amusement, shall keep posted in a conspicuous place in every sleeping room a notice descriptive of such means of escape. And the board of fire commissioners, and the county commission-

ers of any county having no board of fire commissioners, shall have the right to designate the location of the chains and ropes or such other appliances in conformity with this act to be attached to any building under the provisions of this act, and shall grant certificates of approval to every person, firm, corporation, trustee, board of education and board of school directors, complying with the requirements of this act, which certificate shall relieve the party or parties to whom the same shall be issued from the liabilities, fines, damages and imprisonment imposed by this act," shall be amended so as to read as follows:

SECTION 1. That in addition to the means of escape required in section one of the act to which this is a supplement, it shall be the duty of the owner or owners, in fee or for life, of every building constructed more than two stories high and used or intended to be used as a hotel, factory, manufactory, workshop, tenement house, school, seminary, college, academy, hospital, asylum, hall, or place of amusement, and of the trustee or trustees of every estate, association, society, college, academy hospital or asylum, owning or using any building constructed more than two stories high and used or intended to be used for any of said purposes, and of the board of education or board of school directors, having charge of any building constructed more than two stories high and used or intended to be used as a public school, to provide and cause to be securely affixed to a bolt through the wall the window-head, inside of at least one window in each room on the third floor, and in each room on each higher floor, of every such building, a chain at least ten feet in length, with a rope at least one inch in diameter, securely attached thereto, of sufficient length to extend to the ground, or such other appliances as may be approved by the board of fire commissioners of any city or county having a board of fire commissioners, or by the county commissioners of any county where there is no board of fire commissioners: *Provided however*, That when the third floor or any higher floor of any such building is not subdivided into rooms, then at least six windows of each of such floors shall be provided with such chains and ropes, or such other appliances as may be approved by any board of fire commissioners, or by the county commissioners of any county where no board of fire commissioners shall exist: *And provided further*, That whenever any room on the third

9 May. 1889.  
P. L. 170.

Certain buildings to be provided with means of escape.

Ibid., 171.

Where to be located and how secured.

Description of appliance.

To be approved by, fire commissioners, etc.

In case of third or higher floors.

Ibid., 171.



20 May, 1889.  
P. L. 244

How and where  
rope, etc., to be  
kept.

Lights for stairs  
and hallways, and  
alarms to be pro-  
vided.

Notices as to means  
of escape in sleep-  
ing rooms.

Commissioners to  
designate location  
for appliances.  
ibid. 172.

Certificates of ap-  
proval.

Chains and ropes  
may be dispensed  
with in hospitals  
and asylums.

floor, or on any higher floor of any such building, shall contain more than three windows, then at least one window out of every three windows in every such room, shall be provided with such chain and rope, or other such appliance as may be approved by any board of fire commissioners, or by the county commissioners of any county having no board of fire commissioners. And each of such ropes shall be coiled and kept in an unlocked box, in an unobstructed place, near the inside sill of the window to which such ropes are attached. And in all hotels, factories, manufactories, workshops, schools, seminaries, colleges, hospitals, asylums, halls, or places of amusement or other places mentioned in this act, the hallways and stairways shall be promptly lighted at night, and at the head and foot of each flight of stairs, and at the intersection of all hallways with main corridors, shall be kept during the night, a red light, and one or more proper alarms or gongs, capable of being heard throughout the building, shall always remain easy of access and ready for use in each of said buildings, to give notice to the inmates in case of fire. And every keeper of such hotel, factory, manufactory, workshop, school, seminary, college, hospital, asylum, hall or place of amusement, shall keep posted in a conspicuous place in every sleeping room, a notice descriptive of such means of escape. And the board of fire commissioners, and the county commissioners, of any county having no board of fire commissioners, shall have the right to designate the location of the chains and ropes or other such appliance, in conformity with this act, to be attached to any building under the provisions of this act, and shall grant certificates of approval to every person, firm, corporation, trustees, board of education and board of school directors complying with the requirements of this act; which certificates shall relieve the party or parties to whom the same shall be issued from the liabilities, fines, damages and imprisonment imposed by this act. And the board of fire commissioners, and the county commissioners of any county having no board of fire commissioners, may direct that the foregoing requirements, in so far as they relate to the placing and keeping of chains and ropes in hospitals and asylums, may be dispensed with whenever in their judgment the same would be unnecessary.

### THE SALE OF CIGARETTES TO PERSONS UNDER THE AGE OF SIXTEEN YEARS.

**560.** If any person or persons shall sell cigarettes to any person or persons under the age of sixteen years, he or she so offending, shall be guilty of a misdemeanor, and upon conviction thereof shall be sentenced to pay a fine of not more than three hundred dollars.

7 May, 1889.  
P. L. 105

Selling cigarettes to persons under sixteen years of age declared a misdemeanor.  
Penalty.

### VII. REGISTRATION OF PHARMACISTS— SALE OF PROVISIONS.

**561.** Any person who was entitled to registration as a pharmacist, as provided in section three of the act, entitled "An act to regulate the practice of pharmacy and sale of poisons, and to prevent adulterations in drugs and medicinal preparations, in the State of Pennsylvania," approved May twenty-fourth, one thousand eight hundred and eighty-seven, and who failed to apply for registration within the ninety days as provided in said act, may make such application at any time within ninety days after the passage of this act, with the same force and effect as if such application had been made within the ninety days provided in the act of May twenty-fourth, one thousand eight hundred and eighty-seven.

4 May, 1889.  
P. L. 80.

Pharmacists who failed to register under former act may do so within ninety days.

#### SALE OF PROVISIONS BY DESCRIPTION.

**562.** That in every sale of green, salted, pickled or smoked meats, lard and other articles of merchandise, used wholly or in part for food, said goods or merchandise shall correspond in kind and quality with the description given either orally or in writing, by the vender; and in every sale of such goods or merchandise, unless the parties shall agree otherwise, there shall be an implied contract or undertaking that the goods or merchandise are sound and fit for household consumption.

4 May, 1889.  
P. L. 87.

Implied contract as to quality of goods.

**563.** All acts or parts of act inconsistent herewith be and the same are hereby repealed.

### VIII. COAL MINES.

#### THE RECOVERY OF THE BODIES OF WORKMEN ENCLOSED, BURIED OR ENTOMBED IN COAL MINES.

9 May, 1889.  
P. L. 154.

Duty of court.

Mandamus to owner  
&c., of mines, for  
recovery of bodies.

564. Whenever any workman or workmen shall heretofore have been, or shall hereafter be, enclosed, entombed or buried in any coal mine in this commonwealth, it shall be the duty of the court, sitting in equity, in the county wherein such workman or workmen are enclosed, entombed or buried, upon the petition of any relatives of those enclosed, entombed or buried, to make an order of court for the petitioner to take testimony, in order that the court may ascertain whether such workman or workmen, or the body or bodies of such workman or workmen, can be recovered or taken out of said mine. If, after full hearing, it shall appear to the court that such undertaking is feasible or practicable, said court may forthwith issue a peremptory mandamus to the owner or owners, lessee, or lessees, operator or operators of such coal company, to forthwith proceed to work for and recover and take out the body or bodies of such workman or workmen, and said court shall have full authority to enforce such peremptory mandamus in the manner already provided for the enforcement of such process.

### IX. THE STATE WEATHER SERVICE.

23 May, 1889.  
P. L. 335.

\$5,000 appropriated.

Traveling expenses  
of assistant in  
charge.

565. The sum of five thousand dollars shall be and the same is hereby appropriated to be expended according to the provisions of an act, entitled "An act to establish a state weather service of this commonwealth," approved the thirteenth day of May, Anno Domini, one thousand eight hundred and eighty-seven: *Provided*, That in order to carry into effect more completely the purpose of said act, the necessary traveling expenses of the assistant in charge, which may be designated and approved by the Franklin Institute, shall be paid out of the sum here-

by appropriated: *And provided further*, That the clerical expenses chargeable upon this appropriation, shall be limited to the cost of such clerical work as may be necessary in keeping up the correspondence and compiling records and reports for publication. The amount to be paid and work done shall be such as may be designated and approved by the Franklin Institute. The said appropriation to be paid on the warrant of the Auditor General on a settlement made by him and the State Treasurer, but no warrant shall be drawn or settlement made until the directors or managers of said institution shall have made, under oath, to the Auditor General, a report containing an itemized statement of the expenses of said institution during the previous quarter and the same is approved by him and the State Treasurer, nor until the treasurer shall have sufficient money in the treasury not otherwise appropriated to pay the quarterly instalments due said institution.

Clerical expenses.

Payments to be approved by Franklin Institute.

Payable on warrant of Auditor

Itemized statement.



## APPENDIX "B."

LAWS PASSED AT THE SESSION OF 1891, WITH  
THE GENERAL STATUTE OF PUBLIC NUISANCES.

- I. State Board of Health.
- II. Protection of Water Supplies—Drainage.
- III. Adulteration and Sale of Food.
- IV. Quarantine—Port of Philadelphia.
- V. Practice of Veterinary Medicine and Surgery.
- VI. Cremation.
- VII. Regulation of the Practice of Pharmacy and the Sale of Poisons.
- VIII. Health and Safety of Miners.

## I. STATE BOARD OF HEALTH.

To provide for the current expenses of the State Board of Health and Vital Statistics.

8 June, 1891.  
P. L. 226.

SECTION 1. *Be it enacted, &c.*, That the following sums be and are hereby specifically appropriated to defraying the expenses of the State Board of Health and Vital Statistics for two years, namely: For the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety-one, and also for the year commencing on the first day of June, Anno Domini one thousand eight hundred and ninety-two.

\$4,000 for salary of secretary. etc.

\$8,000 for clerical aid. etc.

For salary of secretary and executive officer, for two years, four thousand dollars. For employment of necessary clerical aid in the office of the board, for postage, telegrams, express charges and incidental office expenses, for traveling and other necessary expenses of the members and secretary of the board while engaged in the actual duties of the board, and for sanitary inspec-

tions, control of epidemics, protection of water supplies and laboratory investigations and analyses for two years, eight thousand dollars or so much thereof as may be necessary.

The amounts expended from the above appropriation shall be distributed by the said board, in accordance with the requirements of the sanitary service of the commonwealth, and with reference to such emergencies as may arise, and shall be settled with the Auditor General and State Treasurer in the usual manner

8 June, 1891.  
P. L. 226.

Manner of expenditure.

Providing for the ascertainment of the amount of money expended by James A. Beaver, Governor of the commonwealth, and for the settlement of an account against the commonwealth for said expenditure in removing and abating the nuisances caused by the floods of thirty-first of May and first of June, Anno Domini one thousand eight hundred and eighty-nine, at Johnstown and its vicinity, and in the valleys of the Conemaugh and Kiskiminetas rivers and of the West Branch of the Susquehanna, upon the report and by the direction of the State Board of Health as being dangerous to the public health, and making an appropriation for the payment of the amount so ascertained and settled, to the persons advancing the said money.

28 April, 1891  
P. L. 27

WHEREAS, In consequence of the unexampled and disastrous floods which prevailed in the valleys of the Conemaugh and Kiskiminetas rivers, and along the West Branch of the Susquehanna in this state, on the thirty-first of May and the first of June, one thousand eight hundred and eighty-nine, the destruction of life and property was such as to paralyze all efforts of the communities affected to meet the extraordinary conditions resulting therefrom, and to render inoperative any sanitary laws or regulations which may have existed in said localities :

Preamble No. 1

*And whereas,* The State Board of Health, under and in pursuance of the authority conferred upon it by law, did ascertain and declare the condition of things at Johnstown and the neighboring boroughs, particularly of the drift heap collected at that point in the Conemaugh valley, and of the waters of the Conemaugh and Kiskiminetas rivers, and of certain localities in the valley of the West Branch of the Susquehanna, to be nuisances, and dangerous to the public health, and did thereupon make report thereof to His Excellency James A. Beaver, then Governor of the Commonwealth, and having ascertained and reported that the said nuisances were so great that the local authorities could not abate them, did call upon said

Preamble No.

28 April, 1891  
P. L. 28.

Preamble No. 3.

James A. Beaver, as the chief executive of the commonwealth, at once to employ such force and means as might be necessary to abate them ;

*And whereas,* The said James A. Beaver, in pursuance of the said action of the State Board of Health, and at its request and under its direction, in the exercise of the police power of the commonwealth, undertook the clearing said streams and the abatement of said nuisances, and there was not sufficient time to assemble the legislature in special session in order to secure an appropriation for the said work, which work it was absolutely necessary should be done without delay, in order to preserve the health and safety of the people of this commonwealth :

Preamble No. 4.

*And whereas,* In order to meet and defray the proper expenses of the said work so undertaken, as aforesaid, immediate payment of which was required to be made as the work progressed, it was necessary at once to provide funds therefor, and to that end certain sums of money, amounting in the aggregate to the sum of four hundred thousand dollars (that being the amount deemed necessary to carry on and complete the said work), were advanced and placed in the hands of the said James A. Beaver, Governor as aforesaid, for the purpose above named, by the People's Bank of Philadelphia and William H. Kemble, without interest, upon the acknowledgment of the said Governor, so far as he had the power so to do, of the obligation of the commonwealth to repay the same, without interest as aforesaid ; and in the full the confidence and expectation that the legislature would make the necessary appropriation therefor at its next session :

Preamble No. 5.

*And whereas,* The said James A. Beaver found it necessary to employ a large force of men, and did make various disbursements and expenditures of the said money for machinery, implements, materials and labor in the prosecution and execution of the said public work :

Preamble No. 6.

*And whereas,* The said work was undertaken and performed, and the said money expended for the use and benefit of the commonwealth in the abatement and removal of public nuisances dangerous to the general health and safety, in compliance with the said action and requirement of the said board of health, and in the performance of an imperative public duty admitting of no delay, and the vouchers for the expenditures so made in

that behalf have been deposited and filed with the Auditor General; therefore;

SECTION 1. *Be it enacted, &c.*, That the Auditor General and State Treasurer be and they are hereby authorized and directed to examine and inquire into the said expenditures in connection with the vouchers therefor, and, having ascertained their correctness, to settle an account against the commonwealth for such amount as they shall find to have been expended in the prosecution and execution of the said public work, and that the sum of three hundred and eighty-three thousand eight hundred and fifty-two dollars and sixty-two cents, or so much thereof as shall be necessary to pay the following amounts settled, and found to be due, namely:

|                                                                                                                                       |              |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------|
| To amount expended in the vicinity of Williamsport, by mayor, under the direction of State Board of Health, . . . . .                 | \$15, 000 00 |
| To amount expended by commissioners of Indiana county under direction of State Board of Health and paid by Governor Beaver, . . . . . | 2, 555 45    |
| To amount expended in like manner in Westmoreland county, . . . . .                                                                   | 4, 254 46    |
| To amount expended in like manner in Jersey Shore, Pennsylvania, . . . . .                                                            | 1, 000 00    |
| To amount expended in like manner in Tioga county, Pennsylvania, . . . . .                                                            | 500 00       |
| To amount expended for freightage on Pennsylvania railroad voucher No.—, . . . .                                                      | 423 32       |
| To amount expended in like manner, Pennsylvania railroad voucher No.—, . . . .                                                        | 119 49       |
| To amount expended as above, Baltimore and Ohio railroad, . . . . .                                                                   | 270 00       |
| To amount expended as above, Philadelphia and Reading railroad, . . . . .                                                             | 336 00       |
| To amount awarded James McKnight, contractor, by board of arbitrators, . . . .                                                        | 14, 000 09   |
| To amount awarded Thomas Carlin's Sons, for machinery, in like manner, . . . . .                                                      | 4, 600 00    |
| To amount awarded William Anschultz, in like manner, . . . . .                                                                        | 2, 400 00    |
| To amount awarded Allegheny Light Company, in like manner, . . . . .                                                                  | 418 82       |
| To amount expended by Quartermaster Gen-                                                                                              |              |

28 April, 1891.  
P. L. 28.

Auditor General  
and State Treas-  
urer to examine  
and settle the ac-  
count against the  
commonwealth

\$383,852.62 appro-  
priated.

Items

Ibid, \$3.



28 April, 1891.  
P L. 39.

|                                                                                                                                                                                                                                                                                                             |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| eral Hill and others, expenses to Harrisburg and return, . . . . .                                                                                                                                                                                                                                          | \$45 85    |
| To amount of compensation and expenses of Doctors Groff and Edwards, . . . . .                                                                                                                                                                                                                              | 814 75     |
| To amount expended by the State Board of Health for medical inspectors, disinfectants, et cetera, . . . . .                                                                                                                                                                                                 | 39,928 75  |
| To amount expended by the Quartermaster General of the National Guard of Pennsylvania, under the direction of the State Board of Health, in removing and abating nuisances prejudicial to the public health in the vicinity of Johnstown, including labor, machinery, tools, supplies, et cetera, . . . . . | 293,156 32 |
| To amount expended by the department of public safety, . . . . .                                                                                                                                                                                                                                            | 178 50     |
| To amount expended by the department of accounts, including clerks, superintendents, stationery, et cetera, until December thirty-one, one thousand eight hundred and eighty-nine, . . . . .                                                                                                                | 1,489 00   |
| To amount expended in the same department from December thirty-one, one thousand eight hundred and eighty-nine until March thirty-one, one thousand eight hundred and ninety, including compensation of the Quartermaster General, . . . . .                                                                | 1,519 52   |
| To amount expended by Adjutant General Hastings for clerk hire and stationery, . . . . .                                                                                                                                                                                                                    | 592 39     |
| To amount incidental expenses, . . . . .                                                                                                                                                                                                                                                                    | 250 00     |

Total account, . . . . . \$383,852 62  
be and the same is hereby appropriated out of any moneys in the treasury not otherwise appropriated; the said appropriation to be paid on the warrant or warrants of the Auditor General upon the settlement, so as aforesaid, to be made by the Auditor General and State Treasurer to, and for the use of the said persons advancing the said money so expended as aforesaid, in the proportions represented by the amounts so advanced by them respectively as aforesaid.

Ibid, 30.

Payable on warrant  
of the Auditor General.

In approving this bill I am not unmindful or regardless of the inhibition of section eleven, article III, of the constitution upon the enactment of laws providing for

the payment of any claim against the commonwealth without previous authority of law. The obligation that this bill is intended to discharge arose under peculiar and exceptional circumstances, as appears in the preamble, and is well known to the people of the commonwealth. A calamity wholly unprecedented, and one which no foresight of lawmakers could anticipate, fell upon various sections of Pennsylvania; it affected all of the people, and was followed by results which threatened to further and far more seriously disturb their safety, peace and happiness. The conditions were so startling, the suffering so enormous and the dangers so imminent, that not only was the generous sympathy of the people of the commonwealth excited, but an unprecedented flow of contributions set in from all parts of the country, and even from foreign lands.

Acting upon his inherent executive authority to faithfully execute the laws, regardful of the safety of the people, which is the first concern of free government, my distinguished predecessor undertook and performed, through the lawfully constituted state authorities, the work of clearing and purifying the public streams and of abating and removing the nuisances dangerous to the general health and safety. In the discharge of this duty he was necessarily without any previous appropriation of public moneys to meet the expenses incurred, and he was compelled to individually pledge the honor of the commonwealth for the repayment of a loan made for this purpose.

Special tolerance is given by the constitution to the creation of a state debt to repel invasion, suppress insurrection, defend the state in war and to maintain the credit of the commonwealth by meeting its existing debts. The executive, too, is authorized by law to pay, without previous specific appropriation, the expenses of the National Guard called out under certain circumstances of threatening danger. Of a nature akin to these emergencies, was the occurrence which has passed into history as "The Johnstown flood." The expenditures made by the commonwealth, in connection therewith, were incurred in the lawful exercise of its police power. They have been duly vouched to the satisfaction of the legislature, and the moneys appropriated by this bill are to be paid out only after due examination and inquiry by the fiscal and auditing officers of the state.

28 April, 1891,  
P. L. 30.

23 April, 1891.  
P. L. 30.

In view of these considerations I cheerfully approve this bill, without fear that it will establish a precedent which will ever be abused by the incumbent of the executive office.

I certainly will not find in it any warrant for the expectation that the general assembly will, in contravention of section nine of article IX of the constitution, assume for the commonwealth the debt, or any part thereof, "of any city, county, borough or township," unless the same shall have been contracted as provided for in that section.

#### CONCURRENT RESOLUTIONS.

17 January, 1891.  
P. L. 316.

Preamble No. 1

WHEREAS, By the timely and generous aid of Hon. William H. Kemble, a citizen of Philadelphia, the executive, the State Board of Health, and the various committees having in charge the relief of the stricken sufferers by the disastrous floods of 1889, were enabled to secure a very large sum of money, the state legislature not being in session and the expenditure of the funds of the commonwealth, even in view of the unprecedented character of the calamity at Johnstown and elsewhere, being unauthorized:

Preamble No. 2.

*And whereas*, This aid of the utmost necessity to the health of the whole commonwealth, and to the wants of a large number of our fellow citizens was extended and made effective through the personal financial responsibility of Hon. William H. Kemble; be it

Commending action  
of Hon. William H.  
Kemble.

*Resolved* (if the House of Representatives concur), That the thanks of the General Assembly of Pennsylvania be and are hereby extended to Hon. William H. Kemble, of Philadelphia, for his generous and philanthropic action, and that a copy of the preamble and this resolution, suitably engrossed, be presented to him as a standing memento of same.

27 February, 1891.  
P. L. 402

Preamble No. 1.

WHEREAS, The flood which devastated the country in May, 1889, wrought exceptional and unprecedented ruin in the valley of the Conemaugh, instantly overwhelming and almost totally destroying the flourishing and populous city of Johnstown and surrounding villages, and causing a great and piteous loss of life and enormous destruction of property, the survivors being left utterly helpless, without food, clothing or shelter, and without means of attending to or caring for their sick and wounded or recovering or giving burial to the bodies of their dead:

*And whereas*, Constitutional limitations of the powers of the legislature of the commonwealth prevented the appropriation of public moneys of the state to the relief of the victims of this great calamity, except in so far as considerations of the public health authorized the removal of flood filth and *débris* from the public streets and streams and the restoration of the flooded territory to a wholesome sanitary condition:

27 February, 1891.

P. L. 402.

Preamble No. 2.

*And whereas*, The situation of this Pennsylvania community appealing, as it did, to the citizens of the state, to the people of her sister commonwealths and to the brotherhood of humanity throughout the world, evoked an instantaneous and general response, that illumines the annals of philanthropy and proves that a common impulse to aid the suffering is the one touch of nature that makes the whole world kin:

Preamble No. 3.

*And whereas*, The sources of the relief extended to Johnstown coming from all parts of the civilized world, were so numerous that it is impossible to specifically acknowledge all the contributions made and personal services rendered, of much of which indeed no record has been preserved; therefore,

Preamble No. 4.

*Resolved*, That (the Senate concurring) the thanks of the Commonwealth of Pennsylvania is hereby given to all collectors, treasurers and committees of funds for the relief of Johnstown and surrounding villages, and to all contributors of money, food and clothing for this purpose, and especially to the men and women who gave their personal services to the stricken people, enduring hardships and endangering their health in the work of wisely and tenderly administering to every form of human need, and inspiring a bereaved and destitute community with the courage which has enabled it to renew its orderly life and its accustomed and useful labors.

Commendatory of contributors.

Extract from the journal.

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To prevent the pollution of the waters of streams supplying cities of this commonwealth.

SECTION 1. *Be it enacted, &c.*, That it shall be unlawful to hereafter establish any cemetery upon lands located within one mile from any city of the first class of this commonwealth, the drainage from which empties or passes into any stream from which any portion of the water supply for such city is obtained.

8 June, 1891

P. L. 216.

Unlawful to establish cemetery within one mile of city



To prevent the pollution of springs, water wells and streams by water escaping from abandoned oil wells and gas wells.

26 May, 1891.  
P. L. 122.

When oil or gas well is abandoned it shall be plugged.

SECTION 1. *Be it enacted, &c.,* That upon the abandonment or ceasing to operate or use any well which shall have been drilled for oil or gas, it shall be the duty of the person or persons interested in such well, to plug the same so as to completely shut off and prevent the escape of all water therefrom which may be impregnated with salt or other substances which will render such water unfit for use for domestic, steam making or manufacturing purposes, and in such manner as to prevent water from any such well injuring or polluting any spring, water well or stream which is or may be used for the purposes aforesaid.

Penalty.

SECTION 2. Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall be sentenced, upon conviction thereof, to pay a fine of not more than one thousand dollars, or to undergo an imprisonment for a period not exceeding six months, or both, or either, at the discretion of the court.

Person injured may plug such well and recover expense for same.

SECTION 3. Whenever any person may be injured by neglect or refusal to comply with the first section of this act, it shall be lawful for such person, after notice to the owner or lessee of the premises upon which such well is located, to enter upon and fill up and plug such well in the manner directed by the first section hereof, and thereupon to recover the expense thereof from the person or persons whose duty it was to plug and fill up said well, in like manner as debts of such amount are recoverable.

Repeal.

SECTION 4. All acts and parts of acts inconsistent herewith are hereby repealed.

Making an appropriation to the State Hospital for the Insane at Danville.

1 June, 1891.  
P. L. 155.

\$20,000 appropriated to extend sewage pipes

SECTION 1. *Be it enacted, &c.,* That the sum of twenty thousand dollars, or so much thereof as may be necessary, is hereby specifically appropriated to the State Hospital for the Insane at Danville, Pennsylvania, for the purpose of extending the sewage pipes of said hospital to a point about a mile below the town of Danville; said appropriation to be paid in equal quarterly installments during the two fiscal years commencing June first, one thousand eight hundred and ninety-one.

Payable on warrant of Auditor General.

This said appropriation to be paid quarterly on the warrant of the Auditor General on a settlement made by him and the State Treasurer, but no warrant shall be

drawn on settlement made until the directors or managers of said institution shall have made, under oath, to the Auditor General a report containing an itemized statement of the cost of said sewerage during the previous quarter, and the same is approved by him and the State Treasurer, nor until the treasurer shall have sufficient money in the treasury, not otherwise appropriated, to pay the quarterly instalments due said institution.

1 June, 1891.  
P. L. 155.

Itemized statement  
of expenses.

To authorize the burgess and council of all incorporated boroughs to widen and deepen streams and water courses running through said boroughs, and to erect dykes and embankments along the same, and to empower the burgess and councils to enter upon private property on and along such streams and water courses for the purpose of procuring material for such work, and to provide for the payment of the expense thereof, and the assessment of damages sustained to private parties thereby.

SECTION 1. *Be it enacted, &c.*, That the burgess and town council of all boroughs now incorporated in this commonwealth or that may be hereafter incorporated, are hereby authorized and empowered to widen and deepen all streams and water courses running through and within the same, and to erect such dykes and embankments along the same as shall be necessary to prevent the water therein from breaking through or overflowing the banks thereof.

8 June, 1891.  
P. L. 210.

Burgess and town  
council authorized  
to widen and deepen  
streams.

And the burgess and councils thereof are hereby authorized and empowered, for such purposes, to enter upon private property on and along such streams and water courses.

May enter on pri-  
vate property.

SECTION 2. The burgess and council of said boroughs shall severally have full power and authority, within the limits of their respective boroughs, to enter upon any land or enclosure lying near to such streams and water courses, and to dig, gather and carry to the banks of said streams and water courses, any stones, timber, sand, earth and gravel found thereon which they may deem necessary for the purpose of making, maintaining and repairing the embankments along such streams and water courses, when the same cannot be obtained by contract at reasonable prices, doing no unnecessary damage to the owner or owners of said lands, and repairing any breaches of fences which they shall make.

May gather mate-  
rial along banks of  
streams.

When same cannot  
be obtained at rea-  
sonable prices.

SECTION 3. The burgess and council of any borough as aforesaid, are hereby authorized and empowered to use and appropriate for the payment of the cost of the work and material provided for in this act, any moneys of the

How work shall be  
paid for.

8 June, 1891.  
P. L. 210.

Persons suffering  
damages may com-  
plain to the court  
of quarter sessions.

How damages shall  
be determined.

said boroughs applicable to the ordinary expense of making and maintaining the streets and bridges thereof: *Provided*, That any person aggrieved or claiming to have suffered damage by reason of any ordinance of the burgess and council of any borough in this commonwealth, passed in pursuance of this act, may complain to the court of quarter sessions of the proper county and thereupon proceedings in said court may be had to fix and determine said damages, and the rights of all parties interested, in the same manner and subject to the same conditions as is provided by existing laws in the case of the laying out, widening, opening and straightening of roads, streets, lanes, alleys, courts, common sewers, foot walks, pavements, gutters, cut-outs and drains or other proper regulations thereof, in boroughs of this commonwealth.

2 June, 1891.  
P. L. 169.

Section 1, act of  
April 10, 1873, cited  
for repeal.

To repeal section one of an act approved the tenth day of April Anno Domini one thousand eight hundred and seventy-three, entitled "A supplement to an act, entitled 'An act to regulate the sale of clams and oysters,' approved the fourth day of May, Anno Domini one thousand eight hundred and seventy-one."

SECTION 1. *Be it enacted, &c.*, That section one of an act approved the tenth day of April, Anno Domini one thousand eight hundred and seventy-three, entitled "A supplement to an act, entitled 'An act to regulate the sale of clams and oysters,' approved the fourth day of May, Anno Domini one thousand eight hundred and seventy-one," which reads as follows:

"That it shall be unlawful for any person or persons, during the months of June, July and August, in each year, to bring into this commonwealth, for the sale, or to vend or sell, or to expose for sale, any oysters; and any person or persons so offending shall be guilty of a misdemeanor, and upon conviction shall be sentenced to pay a fine not exceeding one hundred dollars, or undergo an imprisonment not exceeding six months, or both, at the discretion of the court," be and the same is hereby repealed.

Repeal

8 June, 1891.  
P. L. 213.

Shall not sell, pre-  
pare, etc., any lard  
except that which  
contains the pure  
fat of swine.

To prevent fraud in the sale of lard and providing penalties for the violation thereof.

SECTION 1. *Be it enacted, &c.*, That no manufacturer or other person shall sell, deliver, prepare, put up, expose or offer for sale any lard or any article intended for use

as lard, which contains any ingredient but the pure fat of swine, in any tierce, tub, bucket, pail or other vessel or wrapper or under any label bearing the words "pure," "refined," "family," or either of them alone, or in combination with other words, nor unless every vessel, wrapper or label in or under which the article is sold or delivered or prepared, put up or exposed for sale, bears on the top or outside thereof, in letters not less than one-half inch in length and plainly exposed to view, the words "Compound Lard."

8 June, 1891.  
P. L. 213.

Other kinds must be marked "Compound lard."

SECTION 2. Any person who violates any provision of this act shall be punished by a fine not exceeding fifty dollars for the first or one hundred dollars for any subsequent offense.

Penalty for violation.

SECTION 3. This act shall take effect on the first day of October, one thousand eight hundred and ninety-one.

When act shall take effect.

To provide for the ordinary expenses of the executive, judicial and legislative departments of the commonwealth, interest on public debt, and for the support of the public schools, for the years Anno Domini one thousand eight hundred and ninety-one and one thousand eight hundred and ninety-two.

9 June, 1891.  
P. L. 215.

SECTION 1. *Be it enacted, &c.,* That the following sums be and are hereby specifically appropriated to the several objects hereinafter named for the years commencing the first day of June, one thousand eight hundred and ninety-one, and the first day of June, one thousand eight hundred and ninety-two, and to be paid out of any moneys in the treasury not otherwise appropriated.

Appropriations for two years commencing June 1, 1891.

SECTION 2. For the payment of the salaries of the several state officers, the clerks and employes in the several departments of the state government, and for the incidental expenses of the said departments, the sum of five hundred and fifty-nine thousand four hundred and fifty dollars, or so much thereof as may be necessary, the same to be paid by the State Treasurer in the amounts as follows, and in the manner prescribed by law.

Salaries of state officers, clerks, expenses, etc.

SECTION 28. For the payment of the expenses incurred by the commission to select a new location for the Philadelphia quarantine station, the sum of one thousand dollars or so much thereof as may be necessary, the same to be paid on the warrant of the Auditor General on a statement rendered him by the chairman of the commission.

P. L. 279.

Expenses of commission to select location of Philadelphia quarantine station.



## JOINT RESOLUTION.

21 May, 1891.  
P. L. 411.

Governor authorized to appoint commission to procure site for quarantine station.

Joint quarantine.

Shall report to next legislature.

Expenses.

29 April, 1891.  
P. L. 36.

Section 4, act of May 11, 1889, cited for amendment.

Fees.

Prothonotary to give receipt. Registry to be made prior to January 1, 1892.

*Resolved* (if the House of Representatives concur), That the Governor be and is hereby authorized to appoint four persons who shall, with the Governor of the Commonwealth, constitute a board of commissioners whose duty it shall be to communicate with the proper authorities of the federal government, or of any state, with a view to obtaining such concessions as will enable the board of health of the city of Philadelphia, or the Commonwealth of Pennsylvania, to secure a suitable site for a quarantine station at some point remote from the centers of population, on the Delaware river. The commissioners shall also inquire into the feasibility of establishing a joint quarantine for the protection of all the ports on the Delaware river and bay, to be controlled by the several states bordering thereon. The commissioners shall report to the next legislature and shall receive no compensation for their services, but shall be allowed their necessary and actual expenses for traveling, stationery and clerk hire, provisions for which shall be made in the general appropriation bill.

To amend the fourth section of an act, entitled "An act to regulate the practice of veterinary medicine and surgery in Pennsylvania," approved the eleventh day of April, Anno Domini one thousand eight hundred and eighty-nine, so that practitioners shall be admitted to register as such and to pay registration fee at any time prior to the first day of January, one thousand eight hundred and ninety-two, but not on or after that day.

SECTION 1. *Be it enacted, &c.*, That the fourth section of the act, entitled "An act to regulate the practice of veterinary medicine and surgery in Pennsylvania," approved the eleventh day of April, Anno Domini one thousand eight hundred and eighty-nine, which reads as follows: "Every practitioner who shall be admitted to register shall pay to the prothonotary the sum of one dollar, which sum shall be compensation in full for registration. The prothonotary shall give a receipt for the same and such registration shall take place within six months from the passage of this act," shall be amended so as to read as follows: Every practitioner who shall be admitted to register shall pay to the prothonotary the sum of one dollar, which sum shall be compensation in full for registration. The prothonotary shall give a receipt for the same, and such registration shall take place at any time prior to the first day of January, one thousand eight hundred and ninety-two, but not on or after

that day: *Provided*, That nothing in this act shall be taken or construed to apply to persons who practice castration of domestic animals and no other form of veterinary medicine and surgery.

29 April, 1891.

P. L. 36.

Proviso.

In relation to cremation of human bodies in this commonwealth.

8 June, 1891.

P. L. 212

SECTION 1. *Be it enacted, &c.*, That every undertaker or proprietor or person in charge of any crematory or furnace or place where any human corpse shall or may be cremated or incinerated, shall, before removing any such corpse to, or receiving any such corpse at, such crematory, furnace or place for cremating or incinerating the same, obtain a permit to cremate or incinerate such corpse from the board or department of health or local health authorities of the city or locality within which such crematory, furnace or place is situate.

Shall obtain a permit to cremate.

SECTION 2. Before such permit shall be granted, every person applying therefor, shall deposit and file in the office of such board or department of health or local health authorities, a certificate signed in ink by the physician attending during the last illness of such deceased person (or the certificate of the coroner), and the undertaker and proprietor or person in charge of such crematory, furnace or place, setting forth the decedent's name, age, sex, birthplace, color, last residence by ward, street and number, if such residence was in a city, otherwise as nearly as may be, the time of residence therein, the place of last previous residence, the cause, place and time of death, the place, date and hour of the intended cremation or incineration, and, when practicable, the names of the father and mother of deceased.

Must file certificate of last attending physician.

What certificate must contain.

SECTION 3. Any person wilfully violating any of the provisions of this act or being present at, helping or assisting in any cremation or incineration of any human corpse where a permit has not been previously obtained in conformity with and as required by this act, shall forfeit and pay for every offense not less than fifty dollars nor more than three hundred dollars, to be recovered before alderman or police magistrate within the city or county where the offense shall be committed.

Penalty for wilful violation.

How recoverable.

16 June, 1891.  
P. L. 313.

Act of 24 May, 1887,  
cited for amend-  
ment.

To amend an act entitled "An act to regulate the practice of pharmacy and sale of poisons, and to prevent adulterations in drugs and medicinal preparations, in the State of Pennsylvania," approved the twenty fourth day of May Anno Domini one thousand eight hundred and eighty-seven.

SECTION 1. *Be it enacted, &c.,* That the first section of the act, entitled "An act to regulate the practice of pharmacy and sale of poisons, and to prevent adulterations in drugs and medicinal preparations, in the State of Pennsylvania," approved the twenty fourth day of May, Anno Domini one thousand eight hundred and eighty-seven, which reads as follows:

"SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That hereafter no person whomsoever shall open or carry on as manager, in the State of Pennsylvania, any retail drug or chemical store, nor engage in the business of compounding or dispensing medicines, or prescriptions of physicians, or of selling at retail any drugs, chemicals, poisons or medicines, without having obtained a certificate of competency and qualification so to do from the State Pharmaceutical Examining Board, and having been duly registered as herein provided," shall be amended so as to read as follows:

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same,* That hereinafter no person whomsoever, shall open or carry on, as manager, in the State of Pennsylvania, any retail drug or chemical store, nor engage in the business of compounding or dispensing medicines or prescriptions of physicians, or of selling at retail any drugs, chemicals, poisons or medicines, without having obtained a certificate of competency and qualification so to do from the State Pharmaceutical Examining Board, and having been duly registered as herein provided; but it shall be lawful for the widow or legal representatives of a deceased person, who was a manager and registered pharmacist, to carry on or continue the business of such deceased pharmacist: *Provided,* That the actual retailing, dispensing or compounding of medicines or poisons to be done only by an assistant, qualified and registered as herein provided. Any person who shall violate or fail to comply with the provisions of this section, shall be guilty of a misdemeanor, and on conviction

Druggists must have certificate from State Pharmaceutical Board, and be duly registered.

Widow or heirs may carry on business of a registered pharmacist.

But must have qualified assistant.

Penalty for violation.

tion before any court shall be punished by a fine not exceeding one hundred dollars.

Providing for the appointment of a commission by the Governor, to revise, amend and make such changes in the mining and ventilation laws of the anthracite coal regions as will secure greater safety to human life and property, and to provide for the payment of their compensation and their necessary expenses.

SECTION 1. *Be it enacted, &c.*, That the Governor be authorized to appoint forthwith, eight competent miners, (each of whom shall have had at least seven years' experience as miners in the anthracite coal mines of this state), three coal operators, two mining engineers of skill and two mine inspectors, all of whom shall be citizens of Pennsylvania, to serve as commissioners to revise, amend and make such changes in the anthracite mine and ventilation laws as are deemed necessary for the better protection of life and property in and around the mines, and to provide adequate penalties for any violation of said laws.

The miners and mining engineers shall receive five dollars per day and expenses for each day actually employed in the work of said commission, and the operators and inspectors shall be allowed their necessary expenses for each day actually engaged on said commission. The commission shall meet at the call of the Governor in the city of Harrisburg, and they shall report to this session of the legislature, by bill, within a period of thirty-five days after their appointment. A majority of the whole commission shall be necessary for the approval of all questions that may come before it.

SECTION 2. That the sum of six thousand dollars, or so much thereof as may be necessary to pay the same, be and is hereby appropriated out of any money in the treasury not otherwise appropriated, to be paid by warrant drawn by the Auditor General, on an itemized statement furnished to him by the chairman of said commission; and the commission shall have power to employ a competent stenographer whose services shall be paid out of the money hereby appropriated and in the manner herein provided.

27 February, 1891.  
P. L. 4.

Eight competent miners to be appointed.

Three coal operators, two mining engineers and two mine inspectors to be appointed.

Compensation

Time and place of meeting of commission.

\$6,000 appropriated.

How payable.

May employ a stenographer.



To provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania and for the protection and preservation of property connected therewith.

## ARTICLE I.

2 June, 1891.  
P. L. 176.  
Application of act.

SECTION 1. *Be it enacted, &c.*, That this act shall apply to every anthracite coal mine or colliery in the commonwealth, provided the said mine or colliery employs more than ten (10) persons.

## ARTICLE II.

*Inspectors and Inspection Districts.*

Counties and their  
division into eight  
districts.

SECTION 1. The counties of Susquehanna, Wayne, Luzerne, Lackawanna, Carbon, Schuylkill, Northumberland, Columbia, Lebanon and Dauphin, or so much of them as may be included under the provisions of this act, shall be divided into eight (8) inspection districts as follows:

First district

SECTION 2. *First.* All that portion of the Lackawanna coal field lying northeast of East and West Market streets in the city of Scranton, and of Slocum and Drinker street, in the borough of Dunmore, including the coal fields of Susquehanna and Wayne counties.

Second district.

*Second.* That portion of the Lackawanna coal field in Lackawanna county lying southwest of East and West Market streets in the city of Scranton, and west of Slocum and Drinker streets in the borough of Dunmore.

Third district.

*Third.* That portion of the Wyoming coal field situated in Luzerne county, east of and including Plains and Kingston townships.

*Ibid.*, 177.  
Fourth district.

*Fourth.* The remaining portion of the Wyoming coal field west of Plains and Kingston townships, including the city of Wilkesbarre and the boroughs of Kingston and Edwardsville.

Fifth district.

*Fifth.* That part of Luzerne county lying south of the Wyoming coal field together with Carbon county.

Sixth district.

*Sixth.* That part of the Schuylkill coal field in Schuylkill county lying north of the Broad mountain and east of a meridian line through the center of the borough of Girardville.

Seventh district.

*Seventh.* That part of the Schuylkill coal field in Schuylkill county lying north of the Broad mountain and west of a meridian line through the center of the borough of Girardville, together with Columbia, Northumberland and Dauphin counties.

*Eighth.* All that part of the Schuylkill coal field in Schuylkill county lying south of the Mahanoy valley, and the county of Lebanon.

2 June, 1891.  
P. L. 177.  
Eighth district.

SECTION 3. In order to fill any vacancy that may occur in the office of inspector of mines by reason of expiration of term, resignation, removal for cause or from any other reason whatever, the judges of the court of Lackawanna county shall appoint an examining board for the counties of Susquehanna, Wayne and Lackawanna, and the judges of the court of Luzerne county shall appoint an examining board for the counties of Sullivan, Carbon and Luzerne, and the judges of Schuylkill county shall appoint an examining board for the counties of Schuylkill, Northumberland, Lebanon, Columbia and Dauphin.

How vacancies shall be filled.

SECTION 4. The said board of examiners shall be composed of three reputable coal miners in actual practice and two reputable mining engineers, all of whom shall be appointed at the first term of court in each year, to hold their places during the year. Any vacancies that may occur in the board of examiners shall be filled by the court as they occur. The said board of examiners shall be permitted to engage the services of a clerk, and they, together with the clerk, shall each receive the sum of five dollars per day for every day they are actually engaged in the discharge of their duties under this appointment, and mileage at the rate of six cents per mile from their home to the place of meeting and return by the nearest practicable railway route.

Board of examiners, and when appointed.

Vacancies to be filled by the court.

To engage clerk.

Compensation and mileage.

SECTION 5. Whenever candidates for the office of inspector are to be examined, the said examiner shall give public notice of the fact in not more than five papers published in the inspection district, and at least two weeks before the meeting, specifying the time and place where such meeting shall be held. The said examiners shall be sworn to a faithful discharge of their duties, and four of them shall agree in their recommendation of all candidates to the Governor who have answered ninety per centum of the questions; the names of the applicants, the questions asked and answered thereto shall be sent to the Secretary of the Commonwealth, and published in at least two local papers, daily or weekly, and shall recommend only such applicants as they find qualified for the office.

Notice of examination of inspectors to be published.

Examiners to be sworn.

Ibid. 178.

Recommendations, etc., to be sent to the Secretary of the Commonwealth.

Should the board of examiners not be able to agree in their selection and recommendation of a candidate, the judges of the court of common pleas shall dissolve the

If board of examiners fail to agree, court may dissolve board.

2 June, 1891.  
1<sup>o</sup>, L. 178.

Governor shall appoint inspector on recommendation of board.

Removal

Inspector must be a citizen of Pennsylvania, and thirty years old.

Experience required.

Must be sworn or affirmed.

Filing of oath

Shall have modern instruments.

Salary.

How payable.

When and how deputy may be appointed.

Must reside in district for which appointed.

Shall examine collieries.

said board and appoint a new board of like qualifications and powers.

Upon the recommendation of the board of examiners as aforesaid, the Governor shall appoint such person or persons to fill the office of inspector of mines under this act, and shall issue to him a commission for the term of five years, subject, however, to removal for neglect of duty or malfeasance in office as hereinafter provided for.

SECTION 6. The person so appointed must be a citizen of Pennsylvania and shall have attained the age of thirty years. He must have a knowledge of the different systems of working coal mines, and he must produce satisfactory evidence to the board of examiners of having had at least five (5) years' practical experience in anthracite coal mines of Pennsylvania. He must have had experience in coal mines where noxious and explosive gases are evolved.

Before entering upon the duties of his office he shall take an oath or affirmation before an officer properly qualified to administer the same, that he will perform his duties with fidelity and impartiality; which oath or affirmation shall be filed in the office of the prothonotary of the county. He shall also provide himself with the most modern instruments and appliances for carrying out the intentions of this act.

SECTION 7. The salary of each of the said inspectors shall be three thousand dollars per annum, which salary, together with the expenses incurred in carrying into effect the provisions of this act, shall be paid by the State Treasurer out of the treasury of the commonwealth upon the warrant of the Auditor General.

SECTION 8. In case the inspector becomes incapacitated to perform the duties of his office for a longer period than two weeks, it shall be the duty of the judges of the court of common pleas to deputize some competent person recommended by the board of examiners to fill the office of inspector until the said inspector shall be able to fulfil the duties of his office, and the person so appointed shall be paid in the same manner as is provided for the inspector of mines.

SECTION 9. Each of the said inspectors shall reside in the district for which he is appointed, and shall give his whole time and attention to the duties of the office. He shall examine all the collieries in his district as often as his duties will permit or as often as the exigencies of the

case or the condition of the mines require it; see that every necessary precaution is taken to secure the safety of the workmen and that the provisions of this act are observed and obeyed; attend every inquest held by the coroner, or his deputy, upon the bodies of persons killed in or about the collieries in his district; visit the scene of the accident for the purpose of making an examination into the particulars of the same whenever loss of life or serious personal injury occurs as elsewhere herein provided for, and make an annual report of his proceedings to the Secretary of Internal Affairs of the commonwealth at the close of every year, enumerating all the accidents in and about the collieries of his district, marking in tabular form those accidents causing death or serious personal injury, the condition of the workings of the said mines with regard to the safety of the workmen therein and the ventilation thereof, and the result of his labors generally shall be fully set forth.

SECTION 10. The board of examiners, each for its respective district as hereinbefore provided for, in order to divide more equitably among the several mine inspectors the labor to be performed and the territory to be covered by them in the performance of the duties of the office, may, at any time when they shall deem it desirable or necessary, readjust the several districts by the creation of new boundary lines, thereby adding to or taking from, as the case may be, the districts as at present bounded and described, if the court having jurisdiction approve the same.

And in case it shall be deemed desirable or necessary to readjust any contiguous district, comprised by more than one judicial district, by the creation of new boundary lines, then in such case the examining boards of the territory affected or requiring such adjustment, shall, in joint session, make such change or readjustment as they shall jointly agree upon, if the nearest court having jurisdiction to the territory affected to whom the said joint examining boards shall submit the matter, shall approve the same.

SECTION 11. The mine inspector shall have the right, and it is hereby made his duty, to enter, inspect and examine any mine or colliery in his district and the workings and machinery belonging thereto, at all reasonable times, either by day or night, but not so as to impede or obstruct the working of the colliery, and shall have power to

2 June, 1891.  
P. L. 179.

Shall attend every inquest.

Shall make an annual report to Secretary of Internal Affairs.

Contents of report.

Board may re-adjust districts.

Court must approve same.

District comprising more than one judicial district.

Duty of mine inspector.

Shall not impede the working of the colliery.



2 June, 1891  
P. L. 179

Shall inquire into  
the condition of  
mine or colliery.

Ibid, 180

Owner required to  
furnish means for  
inspectors, etc.

Record of visit.

Inspector shall not  
be peculiarly in-  
terested in colliery.

How charges of in-  
competency, etc.,  
of inspector,  
shall be presented.

Investigation of  
charges.

How removed.

How vacancy to be  
filled

Cost of investiga-  
tion.

take one or more of his fellow inspectors into or around any mile or colliery in the district for which he is appointed, for the purpose of consultation or examination.

He shall also have the right, and it is hereby made his duty, to make inquiry into the condition of such mine or colliery workings, machinery, ventilation, drainage, method of lighting or using lights and into all matters and things connected with or relating to, as well as to make suggestions providing for the health and safety of persons employed in or about the same, and especially to make inquiry whether the provisions of this act have been complied with.

The owner, operator or superintendent of such mine or colliery is hereby required to furnish the means necessary for such entry, inspection, examination, inquiry and exit.

The inspector shall make record of the visit, noting the time and material circumstances of the inspection.

SECTION 12. No person who shall act or practice as a land agent or as the manager or agent of any coal mine or colliery, who is pecuniarily interested in operating any coal mine or colliery in his district, shall, at the same time, hold the office of inspector of mines under this act.

SECTION 13. Whenever a petition signed by fifteen or more reputable coal operators or miners, or both, setting forth that any inspector of mines neglects his duties, or is incompetent, or is guilty of malfeasance in office, it shall be the duty of the court of common pleas of the proper county to issue a citation in the name of the commonwealth to the said inspector to appear at not less than five days' notice, on a day fixed, before said court, and the court shall then proceed to inquire into and investigate the allegations of the petitioners. If the court find that the said inspector is neglectful of his duties or that he is incompetent to perform the duties of the office, for any cause that existed previous to his appointment or that has arisen since his appointment, or that he is guilty of malfeasance in office, the court shall certify the same to the Governor of the Commonwealth, who shall declare the office of inspector for the district vacant and proceed, in compliance with the provisions of this act, to appoint a properly qualified person to fill the office.

The cost of said investigation shall be borne by the removed inspector; but if the allegations in the petition are not sustained the costs shall be paid by the petitioners.

SECTION 14. The maps and plans of the mines and the records thereof, together with all the papers relating thereto, shall be kept by the inspector, properly arranged and preserved, in a convenient place in the district for which each inspector has been appointed, and shall be transferred by him, with any other property of the commonwealth that may be in his possession, to his successor in office.

2 June 1891  
P. L. 180.  
Inspector shall keep maps, etc., in a convenient place.

SECTION 15. The persons who, at the time this act goes into effect, are acting as inspectors of mines under the act hereby repealed shall continue to act in the same manner as if they had been appointed under this act, and until the term for which they were appointed has expired.

Inspectors now acting shall continue until term expires.

ARTICLE III.

*Surveys, Maps and Plans.*

SECTION 1. The owner, operator or superintendent of every coal mine or colliery shall make, or cause to be made an accurate map or plan of the workings or excavations of such coal mine or colliery, on a scale of one hundred feet to the inch, which map or plan shall exhibit the workings or excavations in each and every seam of coal and the tunnels and passages connecting with such workings or excavations. It shall state in degrees the general inclination of the strata with any material deflection therein in said workings or excavations, and shall also state the tidal elevations of the bottom of each and every shaft, slope tunnel and gangway, and of any other point in the mine or on the surface where such elevation shall be deemed necessary by the inspector. The map or plan shall show the number of the last survey station and date of each survey on the gangways or the most advanced workings. It shall also accurately show the boundary lines of the lands of the said coal mine or colliery and the proximity of the workings thereto, and in case any mine contains any water dammed up in any part thereof, it shall be the duty of the owner, operator or superintendent to cause the true location of the said dam to be accurately marked on said map or plan, together with the tidal elevation, inclination of strata and area of said workings containing water, and whenever any workings or excavations is approaching the workings where such dam or water is contained or situated, the owner, operator or superintendent shall notify the inspector of the same without delay.

Ibid 181  
Owner shall have accurate map made.  
  
What shall be contained in said map.

Shall give copy of map to inspector and keep one at colliery.

A true copy of which map or plan the said owner, operator or superintendent shall deposit with the inspector of mines for the district in which the said coal mine or colliery is situated, showing the workings of each seam, if so desired by the inspector, on a separate sheet of tracing muslin. One copy of the said map or plan shall be kept at the colliery.

Shall record changes on maps every six months.

SECTION 2. The said owner, operator or superintendent shall, as often as once in every six months, place, or cause to be placed, on the said inspector's map or plan of said coal mine or colliery, the plan of the extensions made in such coal mine or colliery during the preceding six months. The said extensions shall be placed on the inspector's map and the map returned to the inspector within two months from the date of the last survey.

Extensions shall be placed on inspector's maps within two months from date of last survey.

Maps of worked-out or adandoned colliery must include all excavations, etc.

SECTION 3. When any coal mine or colliery is worked out preparatory to being abandoned, or when any lift thereof is about to be abandoned, the owner, operator or superintendent of such coal or mine colliery shall have the maps or plans thereof extended to include all excavations, as far as practicable, and such portions thereof as have been worked to the boundary lines of adjoining properties; or any part or parts of the workings of which is intended to be allowed to fill with water, must be surveyed in duplicate, and such surveys must practically agree, and certified copies be filed with the inspector of the district in which the mines are situated.

Maps shall be extended and certified to inspector.

2 June 1891

P. L. 182.

Neglect or refusal of owner to make map.

SECTION 4. Whenever the owner, operator or superintendent of any coal mine or colliery shall neglect or refuse, or from any cause not satisfactory to the inspector, shall fail, for a period of three months, to furnish to the inspector the map or plan of said colliery or of the extensions thereto, as provided for in this act, the inspector is hereby authorized to cause an accurate map or plan of such coal mine or colliery to be made at the expense of the owner thereof, which cost shall be recoverable from said owner as other debts are by law recoverable.

Inspector shall make map and recover costs from owner

How an inaccurate map may be corrected.

SECTION 5. If the inspector finds or has reason to believe that any map or plan of any coal mine or colliery, furnished under the provisions of this act, is materially inaccurate, it shall be his duty to make application to the court of common pleas of the county in which such colliery is situate for an order to have an accurate map or plan of said colliery prepared, and if such survey shall prove that the map furnished was materially inaccurate

or imperfect, such owner, operator or superintendent shall be liable for the expense incurred in making the same.

2 June, 1891.  
P. L. 182.

Owner liable for costs.

SECTION 6. If it shall be found that the map or plan furnished by the owner, operator or superintendent was not materially inaccurate or imperfect, the commonwealth shall be held liable for the expense incurred in making said test survey.

When commonwealth liable for costs.

SECTION 7. If it shall be shown that the said owner, operator or superintendent has knowingly or designedly caused or allowed such map or plan, when furnished, to be incorrect or false, such owner, operator or superintendent thus offending, shall be guilty of a misdemeanor and upon conviction thereof, shall be punished by a fine not exceeding five hundred dollars or imprisonment not exceeding three months, at the discretion of the court.

Penalty for knowingly furnishing incorrect map.

SECTION 8. The maps or plans of the several coal mines or collieries in each district and which are placed in the custody of the inspector, shall be the property of the commonwealth, and shall remain in the care of the inspector of the district in which the said collieries are situated to be transferred by him to his successor in office; and in no case shall a copy of the same be made without the consent of the owner, operator or superintendent.

Maps shall be property of commonwealth and shall be in the custody of the inspector.

SECTION 9. The inspector's map or plan of any particular colliery shall be open for inspection, in the presence of the inspector, to any miner or miners of that colliery, whenever said miner or miners shall have cause to fear that his or their working place or places is becoming dangerous, by reason of its proximity to other workings which may be supposed to contain water or dangerous gases. Said map shall also be open to the inspection and examination of any citizen interested, during business hours.

Inspector's map shall be open for inspection.

SECTION 10. It shall be obligatory on the owners of adjoining coal properties to leave, or cause to be left, a pillar of coal in each seam or vein of coal worked by them, along the line of adjoining property, of such width, that taken in connection with the pillar to be left by the adjoining property owner, will be a sufficient barrier for the safety of the employes of either mine in case the other should be abandoned and allowed to fill with water; such width of pillar to be determined by the engineers of the adjoining property owners together with the in-

Ibid., 183.

Adjoining owner shall leave pillar of coal in each seam along the line of adjoining property.

How width of pillar shall be determined.



2 June, 1891.  
P. L. 183.

Copy of surveys  
certified to must be  
filed with owners  
and inspectors.

spector of the district in which the mine is situated, and the surveys of the face of the workings along such pillar shall be made in duplicate and must practically agree. A copy of such duplicate surveys, certified to, must be filed with the owners of the adjoining properties and with the inspector of the district in which the mine or property is situated.

#### ARTICLE IV.

##### *Shafts, Slopes, Openings and Outlets.*

Employes must be  
in connection with  
every seam, etc.

Must be two open-  
ings from every lift.

Safe means of in-  
gress and egress.

Shall not apply to  
opening a new  
mine, etc., if not  
more than twenty  
persons are em-  
ployed.

Cages shall be avail-  
able.

Ibid. 184.

How owner shall  
proceed where there  
is only one outlet.

Petition and con-  
tents.

SECTION 1. It shall not be lawful for the owner, operator or superintendent of any mine to employ any person or persons in such mine or permit any person or persons to be in such mine for the purpose of working therein, unless they are in connection with every seam or stratum of coal; and from every lift thereof, worked in such mine, not less than two openings or outlets separated by a strata of not less than sixty (60) feet in breadth underground, and one hundred and fifty (150) feet in breadth at the surface, at which openings or outlets safe and distinct means of ingress and egress are at all times available for the person or persons employed in the said mine, but it shall not be necessary for the said two openings to belong to the same mine if the persons employed therein have safe, ready and available means of ingress and egress by not less than two openings. This section shall not apply to opening a new mine or to opening any new lift of a mine, while being worked for the purpose of making communication between said two outlets, so long as not more than twenty persons are employed at any one time in such mine or new lift of a mine, neither shall it apply to any mine or part of a mine in which the second outlet has been rendered unavailable by reason of the final robbing of pillars previous to abandonment, so long as not more than twenty persons are employed therein at any one time. The cage or cages and other means of egress shall, at all times, be available for the persons employed where there is no second outlet.

SECTION 2. The owner, operator or superintendent of any mine to which there is only one shaft, slope or outlet may petition the court of common pleas in and for the county in which such mine is situated, which said court is hereby empowered to act in the premises, setting forth that, in consequence of intervening lands between the working of his mine and the most practicable

point, or the only practicable point, as the case may be, at which to make or bring to the surface from the working of his mine, he is unable to make an additional shaft, slope or outlet in accordance with the requirements of this act, whereupon the court may make an order of reference and appoint three disinterested persons, residents of the county, viewers, one or more of whom shall be a practical mining engineer, all of whom, after being sworn to a faithful discharge of their duties, shall view and examine the premises and determine as to whether the owner should have the privilege of making an additional outlet through or upon any intervening lands, as the case may require, and report in writing to the court, which report shall be entered and filed of record. If the finding of the viewers, or any two of them, is in favor of the owner of such coal mine or colliery, he may make an additional shaft, slope or outlet under, through or upon intervening lands, as may be determined upon and provided for by the award. If the finding of the viewers is against the owner, or if no award be made by reason of any default or neglect on the part of the owner, he shall be bound to comply with the provisions of this act in the same manner as if this section had not been enacted. In case the said owner, operator or superintendent desires to, and claims that he ought to make an additional opening under, through or upon any adjoining or intervening lands, to meet the requirements of this act, for the ingress and egress of the men employed in his or their mine, he or they shall make a statement of the facts in the petition, with a survey, setting forth the point of commencement and the point of termination of the proposed outlet which he or they, their engineers, agents or employes may enter upon said intervening lands and survey and mark, as he or they shall find it proper to adopt for such additional outlet, doing as little damage as possible to the property explored; and the viewers shall state in their report what damage will be sustained by the owner or owners of the intervening lands by the opening, constructing and using of the outlet, and if the report is not appealed from, it shall be confirmed or rejected by said court as to right and justice shall appertain, and any further and all proceedings in relation thereto shall be in conformity with like proceedings as in the case of a lateral railroad across or under intervening lands, under the act in relation to lateral railroads, ap-

2 June, 1891.  
P. L. 184.

Court shall appoint three viewers.

They shall be sworn and shall examine the premises.

Shall report to the court.

Owner may make additional opening if report is favorable.

Must comply with provisions of this act.

Proceedings where owner desires to make additional opening.

Shall make a statement of facts, etc.

Proceedings in relation to openings shall be same as for lateral railroad.

2 June, 1891.  
P. L. 185.

How notice shall be  
given and costs  
paid.

proved the fifth day of May, Anno Domini one thousand eight hundred and thirty-two, and the supplements thereto, so far as the provisions of the same are applicable hereto; and the notices to the owner of intervening lands, of the intention to apply for the privilege of making an outlet, and meeting of the viewers shall be given, and the costs of the case shall be paid as provided in the said act of fifth day of May, Anno Domini one thousand eight hundred and thirty-two, and the supplements thereto.

Appliances for es-  
capes in case of ac-  
cident.

SECTION 3. The escapements, shafts or slopes shall be fitted with safe and available appliances by which the persons employed in the mine may readily escape in case an accident occurs deranging the hoisting machinery at the main outlets.

Separate traveling  
way

SECTION 4. In slopes where the angle of inclination is fifteen degrees or less there must be provided a separate traveling way, which shall be maintained in a safe condition for travel and kept free from steam and dangerous gases.

No inflammable  
structures shall be  
erected over open-  
ings.

SECTION 5. No inflammable structure, other than a frame to sustain pulleys or sheaves, shall be erected over the entrance of any opening connecting the surface with the underground workings of any mine, and no "breaker" or other inflammable structure for the preparation or storage of coal shall be erected nearer than two hundred (200) feet to any such opening, but this act shall not be construed to prohibit the erection of a fan drift for the purpose of ventilation, or of a trestle for the transportation of cars from any slope to such breaker or structure, neither shall it apply to any shaft or slope until the work of development and shipment of coal has commenced: *Provided*, That this section shall not apply to breakers that are now erected.

Structures per-  
mitted.

Top of shaft shall  
be securely fenced.

SECTION 6. The top of each shaft and also of each slope, if dangerous, or any intermediate lift thereof, shall be securely fenced off by railing or by vertical or flat gates.

Abandoned slope  
shall be fenced.

SECTION 7. Every abandoned slope, shaft, air-hole and drift shall be properly fenced around or across its entrance.

Underground en-  
trances shall be  
fenced.

SECTION 8. All underground entrances to any places not in actual course of working or extension shall be properly fenced across the whole width of such entrances, so as to prevent persons from inadvertently entering the same.

SECTION 9. The owner, operator or superintendent of any coal mine or colliery which is worked by shaft or slope, shall provide and maintain a suitable appliance by or through which conversation can be held by and between persons at the bottom and at the top of the shaft or slope, and also an efficient means of signaling from the bottom of such shaft or slope to the engineer in charge of the hoisting engine.

2 June 1884  
P. L. 185.  
Speaking tubes  
shall be provided.

Also signals.

SECTION 10. Hand rails and efficient safety catches shall be attached to, and a sufficient cover overhead shall be provided on, every cage used for lowering or hoisting persons in any shaft.

Hand rails on every  
cage.

SECTION 11. Whenever practicable, every cage or gunboat used for lowering or hoisting persons in any slope, shall be provided with a proper protector, so constructed that persons, while on such cage or gunboat, shall not be struck by anything which may fall or roll down said slope.

Ibid. 186.  
Cage, etc., shall be  
protected.

SECTION 12. The main link of the chain connecting the rope to the cage, gunboat or car in any shaft or slope, shall be made of the best quality of iron; bridle chains made of the same quality of iron shall be attached to the main link, rope or rope socket from the crosshead of the cage or gunboat when persons are being lowered or hoisted thereon.

Main link, etc.,  
shall be of best  
quality of iron.

SECTION 13. The ropes, safety catches, links and chains shall be carefully examined every day they are used by a competent person delegated for that purpose, and any defects therein found, by which life or limb may be endangered, shall be immediately remedied.

Ropes, etc., exam-  
ined every day.

SECTION 14. An efficient brake shall be attached to every drum that is used for lowering or raising persons or material in any mine.

Efficient brake to  
every drum.

SECTION 15. Flanges or horns of sufficient dimensions to prevent the rope from slipping off the said drum shall be provided and properly attached to the drum, and all machines used for lowering or hoisting persons in mines shall be provided with an indicator to show the position of the cage, car or gunboat in the shaft or slope.

Flanges to prevent  
rope from slipping  
off drum.

Indicators.

SECTION 16. Over all shafts which are being sunk or shall hereafter be sunk, a safe and substantial structure shall be erected to sustain the sheaves or pulleys, at a height of not less than twenty (20) feet above the tipping place, and the top of such shaft shall be arranged in such

Substantial struc-  
ture to sustain  
pulley.

Material must not  
fall into shaft.



2 June, 1891.  
P. L. 186.

When structure for  
pulley shall be erected.

How truck for land-  
ing buckets shall be  
constructed.

Rock and coal to be  
raised in buckets.

Safety hook.

Guides to prevent  
bucket from swing-  
ing.

Ibid, 187.

If strata is not safe  
shaft shall be cased.  
Rules.

manner that no material can fall into the shaft while the bucket is being emptied.

SECTION 17. The said structure shall be erected as soon as a substantial foundation is obtained, and in no case shall a shaft be sunk to a depth of more than fifty (50) feet without such structure.

SECTION 18. If provision is made to land the bucket upon a truck, the said truck shall be constructed in such manner that material cannot fall into the shaft.

SECTION 19. All rock and coal from shafts as they are being sunk, shall not be raised except in a bucket or on a cage, and such bucket or cage must be connected to the rope or chain by a safety hook, clevis or other safe attachment.

SECTION 20. Such shafts shall be provided with guides and guide attachments applied in such manner as to prevent the bucket from swinging while descending or ascending therein, and such guides and guide attachments shall be maintained at a distance of not more than seventy-five (75) feet from the bottom of such shaft, until its sinking shall have been completed, but this section shall not apply to shafts one hundred (100) feet or less in depth.

SECTION 21. Where the strata are not safe every shaft shall be securely cased, lined or otherwise made secure.

SECTION 22. The following rules shall be observed, as far as practicable, in every shaft to which this act applies.

*First.* After each and every blast the chargeman must see that all loose material is swept down from the timbers before the workmen descend to their work.

*Second.* After a suspension of work, and also after firing a blast in a shaft where explosive gases are evolved, the person in charge must have the said shaft examined and tested with a safety lamp before the workmen are allowed to descend.

*Third.* Not more than four persons shall be lowered or hoisted in any shaft on a bucket at the same time, and no person shall ride on a loaded bucket.

*Fourth.* Whenever persons are employed on platforms in shafts the person in charge must see that the said platforms are properly and safely constructed.

*Fifth.* While shafts are being sunk all blasts therein must be exploded by an electric battery.

*Sixth.* Every person who fails to comply with or who

violates the provisions of this article shall be guilty of an offense against this act.

2 June, 1891.  
P. L. 187.

ARTICLE V.

*Boilers and Connections, Machinery, etc.*

SECTION 1. All boilers used for generating steam in and about mines and collieries shall be kept in good order, and the owner, operator or superintendent shall have them examined and inspected by a qualified person as often as once in six months, and oftener if needed. The result of such examination, under oath, shall be certified in writing to the inspector for the district within thirty (30) days thereafter.

Boilers shall be kept in good order, and shall be examined, etc.

SECTION 2. It shall not be lawful to place any boiler or boilers, for the purpose of generating steam, under nor nearer than one hundred (100) feet to any coal breaker or other structure in which persons are employed in the preparation of coal: *Provided*, That this section shall not apply to boilers or breakers already erected.

Boilers shall not be nearer the breaker than 100 feet.

Proviso

SECTION 3. Each nest of boilers shall be provided with a safety valve of sufficient area for the steam to escape and with weights or springs properly adjusted.

Safety valve for boilers.

SECTION 4. Every boiler house shall be provided with a steam gauge properly connected with the boilers, to indicate the steam pressure, and another steam gauge shall be attached to the steam pipe in the engine house and placed in such position that the engineer or fireman can readily examine them and see what pressure is carried. Such steam gauges shall be kept in good order, tested and adjusted as often as once in every six months and their condition reported to the inspector in the same manner as the report of boiler inspection.

Steam gauges.

Must be tested every six months, and reported to inspector.

SECTION 5. All machinery used in or about the mines and collieries, and especially in breakers, such as engines, rollers, wheels, screens, shafting and belting, shall be protected by covering or railing so as to prevent persons from inadvertently walking against or falling upon the same. The sides of stairs, trestles and dangerous plank walks in and around the collieries shall be provided with hand and guard railing to prevent persons from falling over their sides. This section shall not forbid the temporary removal of a fence, guard rail or covering for the purpose of repairs or other operations, if proper precautions are used, and the fence, guard rail or covering is replaced immediately thereafter.

Ibid 188.

All machinery must be protected or covered.

Stairs, etc., shall have guard rail.

Temporary removal

2 June, 1891,  
P. L. 188.  
Engineer shall be  
competent and over  
18 years old.

Signal apparatus on  
breaker.

Oiling machinery.

Loitering around or  
interfering with ma-  
chinery prohibited.

Offense against this  
act.

SECTION 6. A sober and competent person, not under eighteen (18) years of age, shall be engaged to run the breaker engine and he shall attend to said engine while the machinery is in motion.

SECTION 7. A signal apparatus shall be established at important points in every breaker so that in case of an accident the engineer can be promptly notified to stop the machinery.

SECTION 8. No person under fifteen (15) years of age shall be appointed to oil the machinery, and no person shall oil dangerous parts of such machinery while it is in motion.

SECTION 9. No person shall play with, loiter around or interfere with any machinery in or about any mine or colliery.

SECTION 10. Failure to comply with the provisions of this article shall be deemed an offense against this act.

#### ARTICLE VI.

##### *Wash Houses.*

Wash house shall  
be provided at re-  
quest of twenty or  
more miners.

How to be kept and  
supplied.

Penalty for failure  
to comply, etc.

SECTION 1. It shall be the duty of the owner, operator or superintendent of each mine or colliery, at the request in writing of twenty or more men employed in any of the mines, to provide a suitable building, not an engine or boiler house, which shall be convenient to the principal entrance of such mine, for the use of the persons employed therein for the purpose of washing themselves and changing their clothes when entering the mine and returning therefrom. The said building shall be maintained in good order, be properly lighted and heated, and supplied with pure cold and warm water, and shall be provided with facilities for persons to wash. If any person or persons shall neglect or fail to comply with the provisions of this article, or maliciously injure or destroy, or cause to be injured or destroyed, the said building or any part thereof, or any of the appliances or fittings used for supplying light, heat and water therein, or doing any act tending to the injury or destruction thereof, he or they shall be deemed guilty of an offense against this act.

#### ARTICLE VII.

##### *Ambulances and Stretchers.*

Ibid, 189.  
Shall keep ambu-  
lance and stretchers  
at mine.

SECTION 1. The owner, operator or superintendent of every mine or colliery, except as hereinafter provided, shall provide and keep at such mine or colliery an ambu-

lance and also at least two (2) stretchers, for the purpose of conveying to their places of abode, any person or persons who may be injured while in the discharge of his or their work at such mine or colliery.

SECTION 2. The said ambulance shall be constructed upon good, substantial and easy springs. It shall be covered and closed and shall have windows on the sides or ends. It shall be of sufficient size to convey at least two (2) injured persons with two (2) attendants at one time, and shall be provided with spring mattresses or other comfortable bedding to be placed on roller frames, together with sufficient covering and protection and convenient movement of the injured. It shall also be provided with seats for the attendants. The stretchers shall be constructed of such material and in such manner as to afford the greatest ease and comfort in the carriage of the injured person.

2 June, 1891.  
P. L. 189.

Construction of ambulance.

Construction of stretchers.

SECTION 3. Whenever any person or persons employed in or about a mine or colliery shall receive such injury, by accident or otherwise, while so employed, as would render him or them unable to walk to his or their place of abode, the owner, operator or superintendent of such mine or colliery shall immediately cause such person or persons to be removed to his or their place of abode or to an hospital as the case may require.

Person injured shall be removed to his home or to hospital.

SECTION 4. It is provided, however, that the owner, operator or superintendent of any mine or colliery shall be expected from the requirement of an ambulance, as aforesaid, if the places of abode of all the workmen at such mine or colliery be within a radius of a half mile from the principal entrance to such mine.

When ambulance need not be provided.

SECTION 5. It is provided further, that where two or more mines or collieries are located within one mile of each other, or the ambulance is located within one mile of each colliery, but one ambulance, as aforesaid, shall be required, if the said mines or collieries have ready and quick means of communication, one with the other, by telegraph or telephone.

When one ambulance can supply two collieries.

SECTION 6. An ambulance, as aforesaid, shall not be required at any mine or colliery at which less than twenty (20) persons are employed.

If less than 20 persons employed no ambulance required.

SECTION 7. In case the distance from any mine or colliery to the place of abode of the person injured, is such as to permit his conveyance to his home or to an hospital more quickly and conveniently by railway, such mode of

When railroads may be used instead of ambulance.



2 June, 1891,  
P. L. 189.

conveyance shall be permitted, but in such case the conveyance must be under cover and the comfort of the injured person must be provided for.

## ARTICLE VIII.

### *Certified Mine Foreman.*

Mine foreman or assistant must have certificate.

SECTION 1. It shall not be lawful, neither shall it be permitted, for any person or persons to act as mine foreman or assistant mine foreman of any coal mines or colliery, unless they are registered as a holder of a certificate of qualification or service under this act.

Ibid, 190.

Certificate shall be granted by Secretary of Internal Affairs after satisfactory examination by the examiners.

SECTION 2. Certificates of qualification to mine foreman and assistant mine foreman shall be granted by the Secretary of Internal Affairs to every applicant who may be reported by the examiners, as hereinafter provided, as having passed a satisfactory examination and as having given satisfactory evidence of at least five years' practical experience as a miner, and of good conduct, capability and sobriety.

Experience.

Form and record of certificates.

The certificate shall be in manner and form as shall be prescribed by the Secretary of Internal Affairs, and a record of all certificates issued shall be kept in his department.

Board of examiners in each district.

SECTION 3. For the purpose of examination of candidates for such certificates, a board of examiners shall be appointed in each of the inspection districts provided for by this act. The said board shall consist of the district inspector of mines, two (2) practical miners and one owner, operator or superintendent of a mine. The said inspector shall act *ex-officio*, and the said engineer and owner, operator or superintendent shall be appointed in like manner and at the same time as the boards of examiners for candidates for mine inspectorship under this act are now appointed. The said board shall act as such for the period of one year from the date of their appointment. Meetings of the board may be held at any time, and they may make such rules and conduct such examinations as in their judgment may seem proper for the purpose of such examinations. The said board shall report their action to the Secretary of Internal Affairs, and at least three (3) of the members thereof shall certify to the qualification of each candidate who has passed such examination. The traveling expenses of the members of such board to and from their place of meeting, together with the sum of five dollars per day each to the said two (2) practical miners and owner, operator or superintendent, members of each

Who shall serve on such board.

Term.

Meetings and rules.

Report.

Compensation.

board, for each day they are actually engaged therein not exceeding ten (10) days in all, during the year, shall be paid by the commonwealth on an order of the Auditor General drawn on the State Treasurer upon the certificate of the mine inspector, member of such board.

2 June, 1891.  
P. L. 190

How paid.

SECTION 4. Certificates of qualification to mine foreman and assistant mine foreman shall be granted by the Secretary of Internal Affairs to every applicant who may be reported by the examiners, as heretofore provided, as having passed a satisfactory examination and as having given satisfactory evidence of at least five (5) years' practical experience as a miner, and of good conduct, capability and sobriety. The certificate shall be in manner and form as shall be prescribed by the Secretary of Internal Affairs, and a record of all certificates issued shall be kept in the department. Certificates of qualification and certificate of service shall contain the full name, age and place of birth of the applicant, as also the length and nature of his previous service in or about the mines.

Certificates

Ibid., 191.

Contents of certificate.

SECTION 5. Before certificate as aforesaid shall be granted, applicants for same shall pay to the Secretary of Internal Affairs the following fee, namely:

Fees for certificate

For examination, one dollar; for registration of certificate, one dollar; for certificate, one dollar. All fees so received shall be covered into the treasury of the commonwealth.

SECTION 6. No mines shall be operated for a longer period than thirty (30) days without the supervision of a mine foreman. In case any mine is worked a longer period than thirty (30) days without such certified mine foreman, the owner, operator or superintendent thereof, shall be subject to a penalty of twenty dollars per day for each day over the said thirty (30) days during which the said mine is operated.

Penalty for operating without a mine foreman

SECTION 7. In case of the loss or destruction of a certificate, the Secretary of Internal Affairs may supply a copy thereof to the person losing the same upon the payment of the sum of fifty (50) cents: *Provided*, It shall be shown to the satisfaction of the secretary that the loss has actually occurred.

When copy of certificate may issue.

SECTION 8. If any person or persons shall forge or counterfeit a certificate or knowingly make or cause to be made any false statement in any certificate, under this act, or in any official copy of same, or shall urge others to do so, or shall utter or use any such forged or false

Forgery of a certificate or making a false statement in same shall be a misdemeanor.

2 June 1891.  
P. L. 191.

Penalty.

Fire-boss must have  
five years' experi-  
ence, etc.

Shall certify to ex-  
perience.

certificate or unofficial copy thereof, or shall make, give utter, produce or make use of any false declaration, representation or statement in any such certificate or copy thereof or any document containing the same, he or they shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined two hundred dollars or imprisoned for a term not exceeding one (1) year, or both, at the discretion of the court trying the case.

SECTION 9. And no person shall be permitted to act as fire-boss in any coal mine or colliery, except he has had five (5) years' practical experience in mines as a miner, three (3) of which he shall have as a miner wherein noxious and explosive gases are evolved, and the said fire-boss shall certify to the same before entering upon his duties, before an alderman, justice of the peace or other person authorized to administer oaths, and a copy of said deposition shall be filed with the district inspector of mines wherein said person is employed.

#### ARTICLE IX.

##### *Employment of Boys and Females.*

Ibid, 192.

Boys under certain  
age, and all females  
not to be employed  
about colliery.

Shall not apply to  
clerical work.

How age shall be  
determined.

Penalty.

SECTION 1. No boy under the age of fourteen (14) years, and no woman or girl of any age, shall be employed or permitted to be in any mine for the purpose of employment therein. Nor shall a boy under the age of twelve years or a woman or girl of any age, be employed or permitted to be in or about the outside structures or workings of a colliery for the purpose of employment, but it is provided, however, that this prohibition shall not affect the employment of a boy or female of suitable age in an office or in the performance of clerical work at a colliery.

SECTION 2. When an employer is in doubts as to the age of any boy or youth applying for employment in or about a mine or colliery, he shall demand and receive proof of the said lawful employment age of such boy or youth, by certificate from the parent or guardian, before said boy or youth shall be employed.

SECTION 3. If any person or persons contravene or fail to comply with the provisions of this act in respect to the employment of boys, young male persons or females, or if he or they shall connive with or permit others to contravene or fail to comply with said provisions, or if a parent or guardian of a boy or young male person make or give a false certificate of the age of such boy or young male person, or knowingly do or perform any other act

for the purpose of securing employment for a boy or young male person under the lawful employment age and in contravention of the provisions of this act, he or they shall be guilty of an offence against this act.

2 June, 1891.  
P. L. 192.

## ARTICLE X

### *Ventilation.*

SECTION 1. The owner, operator, or superintendent of every mine shall provide and maintain a constant and adequate supply of pure air for the same, as hereinafter provided. Should be provided.

SECTION 2. It shall not be lawful to use a furnace for the purpose of ventilating any mine wherein explosive gases are generated. Use of furnaces prohibited in certain mines.

SECTION 3. The minimum quantity of air thus produced, shall not be less than two hundred (200) cubic feet per minute for each and every person employed in any mine, and as much more as the circumstances may require. Minimum quantity of air to be produced.

SECTION 4. The ventilating currents shall be conducted and circulated to and along the face of each and every working place throughout the entire mine, in sufficient quantities to dilute, render harmless and sweep away smoke and noxious or dangerous gases, to such an extent that all working places and traveling roads shall be in a safe and fit state to work and travel therein. Ventilating currents, how distributed

SECTION 5. All worked-out or abandoned parts of a mine in operation, so far as practicable, shall be kept free of dangerous bodies of gases or water, and if found impracticable to keep the entire mine free from an accumulation of gases or water, the mine inspector must be immediately notified. Ibid. 193.  
Abandoned parts of mine in operation, shall be kept free of gas.

SECTION 6. Every mine employing more than seventy-five (75) persons must be divided into two or more districts. Each district shall be provided with a separate split of pure air and the ventilation shall be so arranged, that not more than seventy-five persons shall be employed at the same time in any one current or split of air. Mine shall be divided into districts  
  
Not more than 75 persons shall have the same current of pure air.

The inlet and return air passages for any particular district must be separated by a pillar of coal or stone, if the thickness and dip of the vein will permit, except where it is necessary to cut through said dividing pillar for the purpose of ventilation, traffic or drainage. When inlet and return air passages shall be separated.

SECTION 7. All air passages shall be of sufficient area to allow the free passage of not less than two hundred Area of air passages.



2 June 1891.  
P. L. 193.

Velocity.

(200) cubic feet of air per minute for every person working therein; and in no case, in mines generating explosive gases, shall the velocity exceed four hundred and fifty (450) lineal feet per minute, in any opening through which the air currents pass, if gauze safety lamps are used, except in the main inlet or outlet airways.

Cross-cuts to be substantially closed.

SECTION 8. All cross cuts connecting the main inlet and outlet air passages of every district, when it becomes necessary to close them permanently, shall be substantially closed with brick or other suitable building material, laid in mortar or cement whenever practicable, but in no case shall said air stoppings be constructed of plank except for temporary purposes.

Doors must close automatically.

SECTION 9. All doors used in assisting or in any way affecting the ventilation shall be so hung and adjusted that they will close automatically.

Main doors must have an attendant.

SECTION 10. All main doors shall have an attendant whose constant duty it shall be to open them for transportation and travel and to prevent them from standing open longer than is necessary for persons or cars to pass through.

How main doors shall be placed.

SECTION 11. All main doors shall be so placed that when one door is open, another which has the same effect upon the same current, shall be and remain closed and thus prevent any temporary stoppage of the air current.

Extra main door.

SECTION 12. An extra main door shall be so placed and kept standing open, so as to be out of reach of accident, and so fixed that it can be at once closed in the event of an accident to the doors in use.

Frame work of main doors.

SECTION 13. The frame work of such main doors shall be substantially secured in stone or brick, laid in mortar or cement unless otherwise permitted in writing by the inspector.

Ibid. 194.

Permanent air bridges, how built.

SECTION 14. All permanent air bridges shall be substantially built of such material and of such strength as the circumstances may require.

Air measurements.

SECTION 15. The quantities of air in circulation shall be ascertained with an anemometer or other efficient instrument; such measurements shall be made by the inside foreman or his assistant once every week at the inlet and outlet airways, also at or near the face of each gangway and at the nearest cross-heading to the face of the inside and outside chamber or breast where men are employed, and the headings shall not be driven more than

Headings shall not be driven more than 60 feet.

sixty (60) feet from the face of each chamber or breast and shall be entered in the colliery report book.

2 June, 1891.  
P. L. 194.

SECTION 16. A report of these air measurements shall be sent to the inspector before the twelfth day of each month, for the preceding month, together with a statement of the number of persons employed in each district.

Report of air measurements to be sent to inspectors, also number employed in each district.

SECTION 17. All ventilators used at mines shall be provided with recording instruments by which the speed of the ventilators or the ventilating pressure shall be registered for each hour, and such data shall be preserved at the colliery for future reference, for a period of three months.

Ventilators must have recording instruments.

SECTION 18. Any person or persons who shall neglect or fail to comply with the provisions of this article, or who shall make any false report in regard to air measurements, shall be guilty of an offense against this act.

Penalty.

## ARTICLE XI.

### *Props and Timbers.*

SECTION 1. It shall be the duty of the owner, operator, superintendent or mine foreman of every mine to furnish to the miners all props, ties, rails and timbers necessary for the safe mining of coal and for the protection of the lives of the workmen. Such props, ties, rails and timbers shall be suitably prepared and shall be delivered to the workmen as near to their working places as they can be conveyed in ordinary mine cars, free of charge.

Props and timbers must be furnished workmen.

SECTION 2. Every workman in want of props, ties, rails or timbers shall notify the mine foreman or his assistant of the fact at least one day in advance, giving the length of the props or timber required; and in case of danger from loose roof or sides, he shall not continue to cut or load coal until the said props and timber have been properly furnished and the place made secure.

Workman shall notify mine foreman of timbers needed.

SECTION 3. A failure to comply with the provisions of this article shall be deemed an offense against this act, and shall be taken to be negligence *per se* on the part of the owner, operator, superintendent or mine foreman, as the case may be, of such mine, in action for the recovery of damages for accidents resulting from the insufficient propping of such mine, through failure to furnish the necessary props or timbers.

Work shall stop in certain cases.

Failure to comply shall be deemed an offense.

## ARTICLE XII.

*General Rules.*

2 June, 1891  
P. L. 195.

General rules.  
Must have mine  
foreman.

The following general rules shall be observed in every mine to which this act applies :

*Rule 1.* The owner, operator or superintendent of a mine or colliery shall use every precaution to ensure the safety of the workmen in all cases, whether provided for in this act or not, and he shall place the underground workings thereof, and all that is related to the same, under the charge and daily supervision of a competent person who shall be called "mine foreman."

Assistant mine  
foreman.

*Rule 2.* Whenever a mine foreman cannot personally carry out the provisions of this act so far as they pertain to him, the owner, operator or superintendent shall authorize him to employ a sufficient number of competent persons to act as his assistants, who shall be subject to his orders.

Ventilation.

*Rule 3.* The mine foreman shall have charge of all matters pertaining to ventilation, and the speed of the ventilators shall be particularly under his charge and direction; and any superintendent who shall cause the mine foreman to disregard the provisions of this act shall be amenable in the same manner as the mine foreman.

When superintend-  
ent shall be amen-  
able.

Abandoned portions  
of mine shall be ex-  
amined.

*Rule 4.* All accessible parts of an abandoned portion of a mine in which explosive gases have been found, shall be carefully examined by the mine foreman or his assistants at least once a week, and all danger found existing therein shall be immediately removed. A report of said examination shall be recorded in a book kept at the colliery for that purpose and signed by the person making the same.

Report shall be  
kept.

Examination of  
mines generating  
gases.

*Rule 5.* In mines generating explosive gases, the mine foreman or his assistant shall make a careful examination every morning of all working places and traveling roads and all other places which might endanger the safety of the workmen, before the workmen shall enter the mine, and such examination shall be made with a safety lamp within three (3) hours at most, before time for commencing work, and a workman shall not enter the mine or his working place until the said mine or part thereof and working place are reported to be safe. Every report shall be recorded without delay in a book

which shall be kept at the colliery for the purpose and shall be signed by the person making the examination.

*Rule 6.* The person who makes said examination shall establish proof of the same by marking plainly the date thereof at the face of each working place and all other places examined.

*Rule 7.* A station or stations shall be established at the entrance to each mine or different parts of each mine, as the case may require, and a workman shall not pass beyond any such station until the mine or part of the mine beyond the same has been inspected and reported to be safe. It shall be the duty of the fire-boss to remain at the danger station until relieved by some person authorized by himself or the mine foreman, who shall stand guard until said mine or part of mine shall be reported safe, and he shall not let any person pass without permission from the fire-boss.

*Rule 8.* If at any time it is found by the person for the time being in charge of the mine or any part thereof, that by reason of noxious gases prevailing in such mine or such part thereof, or of any cause whatever the mine or the said part is dangerous, every precaution shall be used to ensure the safety of the workmen; and every workman, except such persons as may be required to remove the danger, shall be withdrawn from the mine, or such part thereof as is so found dangerous, until the said mine or said part thereof is examined by a competent person and reported by him to be safe.

*Rule 9.* In every working approaching any place where there is likely to be an accumulation of explosive gases, or in any working in which danger is imminent from explosive gases, no light or fire other than a locked safety lamp shall be allowed or used. Whenever safety lamps are required in any mine they shall be the property of the owner of said mine, and a competent person, who shall be appointed for the purpose, shall examine every safety lamp immediately before it is taken into the workings for use, and ascertain it to be clean, safe and securely locked, and safety lamps shall not be used until they have been so examined and found safe, clean and securely locked, unless permission be first given by the mine foreman to have the lamps used unlocked.

*Rule 10.* No one, except a duly authorized person, shall have in his possession a key or any other contrivance for the purpose of unlocking any safety lamp in any

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P. L. 195.

Proof of examination must be marked on face.

Stations to be established.

Ibid, 196.

Fire-boss shall have charge of danger stations.

No one shall pass until mine reported safe.

When noxious gases are found all workmen to be withdrawn until reported safe.

Safety lamps only to be used in certain mines.

Keys for safety lamps.



2 June, 1891.  
P. L. 186.

Blasts.

mine where locked lamps are used. No lucifer matches or any other apparatus for striking light shall be taken into said mine or parts thereof.

*Rule 11.* No blast shall be fired in any mine where locked safety lamps are used except by permission of the mine foreman or his assistants, and before a blast is fired, the person in charge must examine the place and adjoining places and satisfy himself that it is safe to fire such blast before such permission is given.

Mine foreman shall visit mine.

*Rule 12.* The mine foreman or his assistant shall visit and examine every working place in the mine at least once every alternate day, while the men of such place are or should be at work, and shall direct that each and every working place is properly secured by props or timber, and that safety in all respects is assured, by directing that all loose coal or rock shall be pulled down or secured, and that no person shall be permitted to work in an unsafe place unless it be for the purpose of making it secure.

Ibid, 187.

Mine foreman shall examine slopes, etc.

*Rule 13.* The mine foreman, or some other competent person or persons to be designated by him, shall examine at least once every day, all slopes, shafts, main roads, traveling ways, signal apparatus, pulleys and timbering and see that they are in safe and efficient working condition.

Roofs and sides must be properly secured.

*Rule 14.* Any person having charge of a working place in any mine shall keep the roof and sides thereof properly secured by timber or otherwise so as to prevent such roof and sides from falling, and he shall not do any work or permit any work to be done under loose or dangerous material except for the purpose of securing the same.

Accumulations of water.

*Rule 15.* Whenever a place is likely to contain a dangerous accumulation of water, the working approaching such place shall not exceed twelve (12) feet in width, and there shall be constantly kept, at a distance of not less than twenty (20) feet in advance, at least one (1) bore hole near the center of the working and sufficient flank bore holes on each side.

Riding on loaded car

*Rule 16.* No person shall ride upon or against any loaded car, cage or gunboat in any shaft, slope or plane in or about a mine or colliery.

Number of persons to be hoisted or lowered at one time

*Rule 17.* Not more than ten (10) persons shall be hoisted or lowered at any one time in any shaft or slope, and whenever five persons shall arrive at the bottom of

any shaft or slope in which persons are regularly hoisted or lowered they shall be furnished with an empty car or cage and be hoisted, except, however, in mines where there is provided a traveling way having an average pitch of fifteen (15) degrees or less and not more than one thousand (1,000) feet in length. This, however, shall not prohibit the hoisting or lowering of twenty (20) persons at one time on slopes where two (2) or more loaded cars are regularly hoisted: *Provided*, That not less than thirty (30) workmen working therein, make such a request in writing, to the inspector of the district, and if, in his judgment, the hoisting appliances in every respect are of sufficient strength, he may comply with the request of the workmen:

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P. L. 197.

Twenty persons may be hoisted or lowered where two cars are used. If thirty workmen make request.

*Provided* That in any coal mine or colliery where the hoisting appliances are not of sufficient strength to hoist or lower the number of persons named, he shall have the power to reduce the number of persons to be hoisted or lowered.

May reduce the number of persons to be hoisted or lowered.

*Rule 18.* An engineer placed in charge of an engine whereby persons are hoisted or lowered in any mine, shall be a sober and competent person of not less than twenty one (21) years of age.

Qualification of engineer.

*Rule 19.* Every engineer shall work his engine slowly and with great care when any person is being lowered or hoisted in a shaft or slope, and no one shall interfere with or intimidate him while in the discharge of his duties.

How engineer shall work engine.

*Rule 20.* An engineer who has charge of the hoisting machinery by which persons are lowered or hoisted in a mine, shall be in constant attendance for that purpose during the whole time any person or persons are below ground, and he shall not allow any person or persons, except such as may be deputed by the owner, operator or superintendent, to handle or meddle with the engine under his charge or any part of its machinery.

Ibid, 198.

Duty of engineer in charge of hoisting apparatus.

*Rule 21.* When any person is about to descend or ascend a shaft or slope, the headman or footman, as the case may be, shall inform the engineer by signal or otherwise of the fact, and the engineer shall return a signal before moving or starting the engine. In the absence of headman or footman the person or persons about to descend or ascend shall give and receive the signals in the same manner.

Signals for ascending or descending.

2 June, 1891.  
P. L. 198.

Outside foreman.

*Rule 22.* The owner, operator or superintendent of a colliery shall place a competent person to be called "outside foreman," in charge of the breaker and the outside work of such colliery and who shall direct, and, as far as practicable, see that the provisions of this act are complied with in respect to the breaker, outside machinery, ropes, cages and all other things pertaining to the outside work, unless otherwise provided for in this act.

Dust in breaker.

*Rule 23.* In all coal breakers where the coal dust is so dense as to be injurious to the health of persons employed therein, the owner, operator or superintendent of said breaker shall, upon the request of the inspector, immediately adopt measures for the removal of the dust, as far as practicable.

Ventilating current  
or roof, etc., out of  
order must be re-  
ported to mine  
foreman.

*Rule 24.* Any miner or other workman who shall discover anything wrong with the ventilating current or with the condition of the roof, side, timber or roadway, or with any other part of the mine in general, such as would lead him to suspect danger to himself or his fellow workmen or to the property of his employer, shall immediately report the same to the mine foreman or other person, for the time being in charge of that portion of the mine.

Wilful damage to  
any mine or equip-  
ment.

*Rule 25.* Any person or persons who shall knowingly or wilfully damage, or without proper authority, remove or render useless any fencing, means of signaling, apparatus, instrument or machine, or shall throw open or obstruct any air-way, or open a ventilating door and not have the same closed, or enter a place in or about a mine against caution, or carry fire, open lights or matches in places where safety lamps are used, or handle without proper authority, or disturb any machinery or cars, or do any other act or thing whereby the lives or health of persons or the security of the property in or about a mine or colliery are endangered, shall be guilty of an offense against this act.

Carrying fire or  
open lights.

Care of explosives.

*Rule 26.* Gunpowder or any other explosive shall not be stored in any mine, and a workman shall not have at any one time in any one place, more than one keg or box containing twenty five (25) pounds, unless more is necessary for a person to accomplish one day's work.

Ibid, 139.

How explosives  
shall be kept.

*Rule 27.* Every person who has gunpowder or other explosive in a mine, shall keep it in a wooden or metallic box securely locked, and such box shall be kept at

least ten (10) feet from the tracks in all cases where room at such a distance is available.

*Rule 28.* Whenever a workman shall open a box containing explosive or while in any manner handling the same, he shall first place his lamp not less than five (5) feet from such explosive and in such a position that the air current cannot convey sparks to it, and a workman shall not approach nearer than five (5) feet to an open box containing powder, with a lamp, lighted pipe or any other thing containing fire.

*Rule 29.* When high explosives other than gunpowder are used in any mine, the manner of storing, keeping, moving, charging and firing or in any manner using such explosives, shall be in accordance with special rules as furnished by the manufacturers of the same. The said rules shall be endorsed with his or their official signature and shall be approved by the owner, operator or superintendent of the mine in which such explosives are used.

*Rule 30.* In charging holes for blasting in slate or rock in any mine, no iron or steel-pointed needle shall be used, and a tight cartridge shall not be rammed into a hole in coal, slate or rock with an iron or steel tamping bar, unless the end of the tamping bar is tipped with at least six (6) inches of copper or other soft metal.

*Rule 31.* A charge of powder or any other explosive in slate or rock which has missed fire shall not be withdrawn or the hole reopened.

*Rule 32.* A miner or other person who is about to explode a blast by the use of patent or other squibs or matches, shall not shorten the match, nor saturate it with mineral oil, nor turn it down when placed in the hole, nor ignite it except at its extreme end, nor do anything tending to shorten the time the match will burn.

*Rule 33.* When a workman is about to fire a blast he shall be careful to notify all persons who may be in danger therefrom, and shall give sufficient alarm before and after igniting the match so that any person or persons who may be approaching shall be warned of the danger.

*Rule 34.* Before commencing work and also after the firing of every blast, the miner working a breast or any other place in a mine, shall enter such breast or place to examine and ascertain its condition, and his laborer or assistant shall not go to the face of such breast or place

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P. L. 199

Manner of handling explosives.

Storage, etc., must be in accordance with special rules by manufacturers of explosives.

And approved by owner.

Manner of charging holes for blasting.

Tamping bar.

When charge missed fire.

Must not shorten the match, etc.

Before firing blast all persons must be notified.

Must examine after each blast.



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P. L. 199.

Blaster must be  
qualified to do such  
work

*Ibid.*, 200.

Inexperienced  
miners shall not  
fire a blast.

Removal of gas.

Ignited gas must be  
extinguished.

Duties of fireman in  
charge of boilers.

Headman and foot-  
man.

Duties

until the miner has examined the same and found it to be safe.

*Rule 35.* No person shall be employed to blast coal or rock unless the mine foreman is satisfied that such person is qualified, by experience and judgment, to perform the work with ordinary safety.

*Rule 36.* A person who is not a practical miner shall not charge or fire a blast in the absence of an experienced miner, unless he has given satisfactory evidence of his ability to do so with safety, and has obtained permission from the mine foreman or person in charge.

*Rule 37.* An accumulation of gas in mines shall not be removed by brushing where it is practicable to remove it by brattice.

*Rule 38.* When gases ignited by blast or otherwise, the person igniting the same shall immediately extinguish it, if possible, and notify the mine foreman or his assistant of the fact, and workmen must see that no gas blowers are left burning upon leaving their working places.

*Rule 39.* Every fireman in charge of a boiler or boilers for the generation of steam, shall keep a constant watch of the same. He shall see that the steam pressure does not at any time exceed the limit allowed by the outside foreman or superintendent. He shall frequently try the safety valve, and shall not increase the weight on the same. He shall maintain a proper depth of water in each boiler, and if anything should happen to prevent this, he shall report the same without delay to the foreman for the time being in charge, and take such other action as may under the particular circumstances be necessary for the protection of life and preservation of property.

*Rule 40.* At every shaft or slope in which provision is made in this act for lowering and hoisting persons, a headman and footman shall be designated by the superintendent or foreman to be at their proper places from the time that persons begin to descend, until all the persons who may be at the bottom of said shaft or slope when quitting work shall be hoisted. Such headman and footman shall personally attend to the signals and see that the provisions of this act, in respect to lowering and hoisting persons in shafts or slopes, shall be complied with.

*Rule 41.* No person, except the man giving the signal, shall jump on a car, cage or gunboat after the signal to start has been given, and if any person should enter a car, cage or gunboat in excess of the lawful number the headman or footman shall notify him of the fact and request him to get off, which request must be immediately complied with. Any violation of this rule must be reported promptly to the mine foreman.

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P. L. 200

Jumping on cars  
after signal pro-  
hibited.

*Rule 42.* An empty trip shall be hoisted in any shaft or slope where the engine has been standing idle for one hour or more, before men are hoisted or lowered in said shafts or slopes, and no person or persons shall ascend any shaft or slope when working on the night turn, until one trip shall first be hoisted therein.

Empty trip must be  
hoisted after engine  
has been idle one  
hour.

*Rule 43.* Every passage-way used by persons in any mines and also used for transportation of coal or other material, shall be made of sufficient width to permit persons to pass moving cars with safety, but if found impracticable to make any passage-way of sufficient width, then holes of ample dimensions, and not more than one hundred and fifty (150) feet apart, shall be made on one side of said passage-way. The said passage-way and safety holes shall be kept free from obstructions and shall be well drained; the roof and sides of the same shall be made secure.

Construction of  
passage-way

Ibid. 201.

Safety holes.

*Rule 44.* When locomotives are used in any mine their speed shall not exceed six (6) miles per hour, and an efficient alarm shall be provided and attached to the front end of every train of cars pushed by a locomotive in any mine or part of a mine.

Speed of locomotives.

*Rule 45.* Locomotives propelled by steam, if using fire, shall not be used in any passage-way which is also used as an in-take air-way to any mine or part of a mine where persons are employed, unless there be a sufficient quantity of air circulating therein to maintain a healthy atmosphere.

Locomotives using  
fire prohibited in  
certain passage-  
ways.

*Rule 46.* No person shall couple or uncouple loaded or empty cars while the same are in motion: *Provided* however, That this shall not apply to the top or bottom men of slopes, planes or shafts.

Coupling or un-  
coupling cars.

*Rule 47.* When cars are run on gravity roads by breaks or sprags, the runner shall only ride on the rear end of the last car, and when said cars are run by sprags, a space of not less than two (2) feet from the body of the car shall be made on one or both sides of the track, wher-

Cars on gravity  
roads run by brakes  
or sprags.

Space of two feet  
from body of cars.

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Cars shall be run by  
suitable persons  
only.

ever it may be necessary for the runner to pass along the side of the moving car or cars, and said space or passage-way shall always be kept free from obstructions.

*Rule 48.* No miner or laborer shall run cars out of any breast or chamber or on any gravity road unless he is a suitable person, employed by the mine foreman for that particular work; and no person shall be employed by any mine foreman to perform such work, under the age of sixteen (16) years.

Safety holes at bot-  
tom of slopes, etc.

*Rule 49.* Safety holes shall be made at the bottom of all slopes and planes and be kept free from obstruction to enable the footman to escape readily in case of danger.

Safety blocks

*Rule 50.* Safety blocks or some other device for the purpose of preventing cars from falling into a shaft or running away on a slope or plane, shall be placed at or near the head of every shaft, slope or plane, and said safety blocks or other device must be maintained in good working order.

Travel on gravity  
train prohibited.

*Rule 51.* No person shall travel on any gravity train while cars are being hoisted or lowered thereon. Whenever ten (10) persons arrive at the bottom or top of any plane on which it is necessary for men to travel, traffic thereon shall be suspended for a period of time long enough to permit them to reach the top or bottom of said plane.

When traffic shall  
be suspended on  
plane.

Bumpers on mine  
cars.

*Rule 52.* No mine cars shall be used in any mine unless the bumpers are of sufficient length and width to keep the bodies of said cars separated by not less than twelve (12) inches when the cars stand on a straight level road and the bumpers touch each other.

*Ibid.* 202

Coal breakers shall  
be heated.

*Rule 53.* It shall be the duty of the owner, operator or superintendent of any or all coal breakers, to have them properly heated in order to prevent injury to the health of persons employed therein.

Abstract of rules  
shall be posted up.

*Rule 54.* For the purpose of making known the rules and the provisions of this act to all persons employed in or about such mine or colliery to which this act applies, an abstract of the act and rules shall be posted up in legible characters in some conspicuous place or places at or near the mine or colliery, where they may be conveniently read by the persons employed, and so often as the same becomes obliterated or destroyed the owner, operator or superintendent shall cause them to be renewed with all reasonable dispatch. Any person who pulls down, injures or defaces such abstract of the act or

Penalty for de-  
stroying rules.

rules when posted up in pursuance to the provisions of this act, shall be guilty of an offense against this act.

2 June, 1891.  
P. L. 202.

*Rule 55.* No person or persons working in any coal mine or colliery shall cut any props or timbers while the same are in position to support the roof or sides. When it becomes necessary to remove any of the said props or timbers for the purpose of mining coal that may be supported by the same, to dislodge any of the said props or timbers, it must be done by blasting.

Cutting of props and timber prohibited.

Must be removed by blasting.

*Rule 56.* It shall not be lawful for any mine foreman or superintendent of any mine or colliery to employ any person who is not competent to understand the regulations of any mine evolving explosive gases: *Provided*, That this rule will not apply to a section of mine free from the said explosives gases.

Who shall be employed in mine evolving gases

Exceptions

*Rule 57.* Any superintendent or mine foreman who prevents the footman from giving an empty car or cage to the number of men designated in a former rule, shall, upon information by any person engaged in the mines given the mine inspector, be fined the sum of fifty dollars for each offense.

Penalty for not giving car to number of men

*Rule 58.* Every person who fails to comply with any of the foregoing rules or any of the provisions of this article, shall be guilty of an offense against this act.

Penalty for failure to comply with foregoing rules.

ARTICLE XIII.

*Inquests.*

Ibid. 205.

SECTION 1. Whenever loss of life to a miner or other employe occurs in or about a mine or colliery, notice thereof shall be given promptly to the inspector of mines for the district in which the accident occurred, by the mine foreman or outside foreman or other person having immediate charge of the work at the time of the accident; and when death results from personal injury such notice shall be given promptly after the knowledge of the death comes to the said foreman or person in charge.

Inspector to be promptly notified of loss of life.

SECTION 2. Whenever loss of life occurs or whenever the lives of persons employed in a mine or at a colliery are in danger from any accident, the inspector of mines shall visit the scene of the accident as soon as possible thereafter and offer such suggestions, as in his judgment shall be necessary, to protect the lives and secure the safety of the persons employed. In case of death from such accident, and after examination he finds it necessary

Inspector shall visit scene of accident.

Shall notify coroner.



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If coroner fail to  
hold inquest  
inspector shall in-  
vestigate.

Record shall be  
kept.

Costs of investi-  
gation.

Coroner shall ad-  
journ inquest if in-  
spector is not  
present.

Notice of inquest.

If accident occur  
from neglect cor-  
oner shall notify in-  
spector.

Qualification of  
jurors.

that a coroner's inquest shall be held, he shall notify the coroner to hold such inquest without delay, and if no such inquest be held by the coroner within twenty-four (24) hours after such notice, the inspector shall institute a further and fuller examination of such accident, and for this purpose he shall have power to compel the attendance of witnesses at such examination and to administer oaths and affirmations to persons testifying thereat. The inspector shall make a record of all such investigations and accidents, which record shall be preserved in his office. The costs of such investigation shall be paid by the county in which the accident occurred in like manner as costs of inquests held by coroners or justices of the peace are now paid.

SECTION 3. An inquest held by the coroner upon the body of a person killed by explosion or other accident, shall be adjourned by the coroner if the inspector of mines be not present to watch the proceedings, and the coroner in such case shall notify the inspector, in writing, of such adjourned inquest, and the time and place of holding the same, at least three (3) days previous thereto.

SECTION 4. Due notice of an intended inquest to be held by the coroner, shall be given by the coroner to the inspector, and at any such inquest the inspector shall have the right to examine witnesses.

SECTION 5. If, at any inquest held over the body or bodies of persons whose death was caused by an accident in or about a mine or colliery, the inspector be not present, and it is shown by the evidence given at the inquest that the accident was caused by neglect or by any defect in or about the mine or colliery, which, in the judgment of the jury, requires a remedy, the coroner shall send notice in writing to said inspector of such neglect or default.

SECTION 6. No person who is interested personally, nor a person employed in the mine or at a colliery in or at which loss of life has occurred by accident, shall be qualified to serve on a jury empaneled on the inquest, and a constable or other officer shall not summons such a person so disqualified as juror, but the coroner shall empanel a majority of the jury from miners who are qualified to judge of the nature of the accident; every person who fails to comply with the provisions of this article shall be guilty of an offense against this act.

## ARTICLE XIV.

*Returns, Notices, Etc.*

SECTION 1. Notices of deaths or serious injuries resulting from accidents in or about mines or collieries, shall be made to the inspector of mines, in writing, and shall specify the name, age and occupation of the person killed or injured, and also the nature and character of the accident and of the injury caused thereby.

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P. L. 204

Notices of death,  
etc., shall be sent  
to inspector  
Contents of notice.

SECTION 2 The owner, operator or superintendent of a mine or colliery, shall, without delay, give notice to the inspector of the district in which said mine or colliery is situated in any or all of the following cases:

When owner shall  
give notice to in-  
specter.

*First.* Where any working is commenced for the purpose of opening a new slope or mine to which this act applies.

New work com-  
menced.

*Second.* Where any mine is abandoned or the workings thereof discontinued.

Mine abandoned.

*Third.* Where the working of any mine is recommenced after an abandonment or discontinuance for a period exceeding three months.

Work recommenced  
after abandon-  
ment.

*Fourth.* Where any new coal breaker is completed and work commenced therein for the purpose of preparing coal for market.

When new breaker  
is completed.

*Fifth.* Where the pillars of a mine are to be removed or robbed.

Removal of pillars.

*Sixth.* Where a squeeze or crush or any other cause or change may seem to affect the safety of persons employed in any mine, or where fire occurs or a dangerous body of gas is found in any mine.

Squeeze, crush, fire  
or gas.

SECTION 3. On or before the first day of February in each year, the owner, operator or superintendent of every mine or colliery, shall send to the inspector of the district, a correct report specifying with respect to the year ending December thirty-first, previously, the name of the operator and officials of the mine, with his post-office address the quantity of coal mined; the amount of powder or other explosives consumed; the number of persons employed above and below ground in or about such colliery, classifying the persons so employed. The report shall be in such form as may be from time to time prescribed by the inspector of the district. Blank forms for said report shall be furnished by the commonwealth.

Annual report by  
owner.

Contents of report

Form.

Blanks.

## ARTICLE XV.

*Injunctions.*

2 June 1891.  
P. L. 204.  
Court may restrain  
the working of mine  
by injunction.

Costs.

Ibid. 205.

Written notice  
must be served on  
owner.

SECTION 1. Upon application of the inspector of mines of the proper district, acting in behalf of the commonwealth, any of the courts of law or equity having jurisdiction where the mine or colliery proceeded against is situated, whether any proceedings have or have not been taken, shall prohibit, by injunction or otherwise, the working of any mine or colliery in which any person is employed or is permitted to be for the purpose of working, in contravention of the provisions of this act, and may award such costs in the matter of the injunction or other proceedings as the court may think just; but this section shall be without prejudice to any other remedy permitted by law for enforcing the provisions of this act. Written notice of the intention to apply for such injunction in respect to any mine or colliery, shall be made to the owner, operator or superintendent of such mine or colliery not less than twenty-four (24) hours before the application is made.

## ARTICLE XVI.

*Arbitration.*

When arbitration  
may be had.

How notices shall  
be given.

Right of owner.

Costs.

Arbitrators, how  
chosen.

Decision shall be  
final.

SECTION 1. Whenever an inspector finds any mine or colliery or part thereof, or any matter, thing or practice connected with such mine, which in any respect thereof is not covered by or provided against by any provision of this act or by any rule, to be dangerous or defective, or in his judgment tends to bodily injury to a person, he shall give notice thereof in writing to the owner, operator or superintendent of such mine or colliery, stating in such notice the particular matter or defect requiring remedy, and may demand that the same be remedied; but the owner, operator or superintendent of said mine or colliery shall have the right to refer the demand of the inspector to a board of arbitration, and the matter shall then be arbitrated within forty-eight (48) hours of the time such complaint or demand be made. And the party against whom the award is given shall pay all cost attending the case. The said board of arbitration shall be composed of three (3) persons, one of whom shall be chosen by the inspector, one by the said owner, operator or superintendent and a third by the two thus selected, and the decision of a majority of such board shall be final and binding in the matter.

## ARTICLE XVII.

*Penalties.*

SECTION 1. Any judge of the court of quarter sessions of the peace of the county in which the mine or colliery, at which the offense, act or omission as hereinafter stated has occurred, is situated, is hereby authorized and required, upon the presentation to him of the affidavit of any citizen of the commonwealth setting forth that the owner, operator or superintendent, or any other person employed in or about such mine or colliery had been negligently guilty of an offense against the provisions of this act, whereby a dangerous accident had resulted or might have resulted to any person or persons employed in such mine or colliery, to issue a warrant to the sheriff of said county directing him to cause such person or persons to be arrested and brought before said judge, who shall hear and determine the guilt or innocence of the person or persons so charged; and if convicted he or they shall be sentenced to pay a fine not exceeding five hundred dollars, in all cases not otherwise provided for in this act, or an imprisonment in the county jail for a period not exceeding three (3) months or both, at the discretion of the court: *Provided*, That any defendant may waive a trial before a judge as herein provided and at any time, at or before the time of such trial, demand a trial by a jury in the court of quarter sessions, in which case he may enter into a recognizance before said judge with such surety or sureties and in such sum as said judges may approve, conditioned for his appearance at the next court of quarter sessions to answer the charge against him and abide the orders of the court in the premises, meanwhile to be of good behavior and keep the peace, or in default of such recognizance to be committed to the county jail to await such trial.

SECTION 2. If any person shall feel himself aggrieved by such conviction and sentence before a judge as aforesaid, he may appeal therefrom subject to the following conditions namely: The appellant shall, within seven days after the decree has been made, give notice to the prosecutor of his intention to appeal, and within the same time enter into a recognizance, with such surety or sureties and in such sum as shall be approved by said judge, conditioned to appear and try such appeal before the next court of quarter sessions of the peace and to abide

2 June 1891.  
P. L. 206.

On complaint of any citizen of the commonwealth judge of quarter sessions court authorized to hear and determine charges.

Shall issue warrant.

Ibid. 206.

Penalty.

Defendant may waive trial before judge and demand trial by jury.

Recognizance.

May appeal from conviction before judge.

Conditions of appeal.



2 June, 1891.  
P. L. 206.

Shall not be a bar to  
indictment.

Offenses under this  
act declared mis-  
demeanors and  
penalty prescribed.

Violation by mine  
inspector, a misde-  
meanor.

Penalty.

Ibid, 207.

Disposition of fines.

Conviction or ac-  
quittal shall not be  
evidence in action  
for damages.

Right of action shall  
accrue for injury in  
person or property  
by violation of act  
by owners, etc.

May accrue to  
widows.

the judgment of the court thereon and to pay all such costs and penalties as may be there awarded, and upon the compliance with such conditions the judge shall release the appellant from custody pending the appeal.

SECTION 3. Nothing in this act shall prevent any person from being indicted or liable under any other act, to any higher penalty or punishment than is herein provided, and if the court before whom any such proceeding is had shall be of the opinion that proceedings ought to be taken against such persons under any other act, or otherwise, he may adjourn the case to enable such proceedings to be taken.

SECTION 4. All offenses under this act are declared to be misdemeanors and in default of payment of any penalty or cost by the party or parties sentenced to pay the same, he or they may be imprisoned for a period not exceeding three (3) months and not less than thirty (30) days.

SECTION 5. For any violation of duty by the mine inspector prescribed by this act, he shall be deemed guilty of a misdemeanor, and, upon conviction, be sentenced to pay a fine of not more than three hundred dollars or be imprisoned for a period not exceeding three months, or either, or both, at the discretion of the court.

SECTION 6. All fines imposed under this act shall be paid into the county treasury for the use of the county.

SECTION 7. No conviction or acquittal under this act, in any complaint, shall be received in evidence upon the trial of any action for damages arising from the negligence of any owner, operator or superintendent or employe in any mine or colliery.

SECTION 8. That for any injury to person or property occasioned by any violation of this act or any failure to comply with its provisions by any owner, operator, superintendent, mine foreman or fire-boss of any coal mine or colliery, a right of action shall accrue to the party injured against said owner or operator for any direct damages he may have sustained thereby; and in case of loss of life by reason of such neglect or failure aforesaid, a right of action shall accrue to the widow and lineal heirs of the person whose life shall be lost, for like recovery of damages for the injury they shall have sustained.

## ARTICLE XVIII.

*Definition of Terms.*

In this act, unless the context otherwise requires, the term "coal mine or colliery" includes every operation and work, both under ground and above ground, used or to be used for the purpose of mining and preparing coal.

2 June, 1891.  
P. L. 207  
Coal mine or colliery.

The term "workings" includes all the excavated parts of a mine, those abandoned as well as the places actually at work.

Working

The term "mine" includes all underground workings and excavations and shafts, tunnels and other ways and openings; also all such shafts, slopes, tunnels and other openings in course of being sunk or driven, together with all roads, appliances, machinery and materials connected with the same below the surface.

Mine.

The term "shaft" means a vertical opening through the strata and which is or may be used for the purpose of ventilation or drainage or for hoisting men or material in connection with the mining of coal.

Shaft.

The term "slope" means any inclined way or opening used for the same purpose as a shaft.

Slope.

The term "breaker" means the structure containing the machinery used for the preparation of coal.

Breaker.

The term "owners" and "operators" means any person or body corporate who is the immediate proprietor or lessee or occupier of any coal mine or colliery or any part thereof. The term "owner" does not include a person or body corporate who merely receives a royalty, rent or fine from a coal mine or colliery or part thereof, or is merely the proprietor of the mine subject to any lease, grant or license for the working or operating thereof, or is merely the owner of the soil and not interested in the minerals of the mine or any part thereof.

Owners and operators.

Who not included in term "owner."

But any "contractor" for the working of a mine or colliery or any part or district thereof, shall be subject to this act as an operator or owner, in like manner as if he were the owner.

Ibid. 208.

Contractor shall be subject to this act as if he were owner.

The term "superintendent" means the person who shall have, on behalf of the owner, general supervision of one or more mines or collieries.

Superintendent.

## ARTICLE XIX.

All laws or parts of laws inconsistent or in conflict with the provisions of this act are hereby repealed.

Repeal.

## JOINT RESOLUTION.

24 February, 1891,  
P. L. 401.

Preamble.

Appointment of a  
commission on ven-  
tilation and regula-  
tion of bituminous  
coal mines autho-  
rized

WHEREAS, The present laws relating to ventilation and regulation of the bituminous coal mines of this state are defective and in many respects imperfect; therefore, be it

*Resolved* (if the Senate concur), That the Governor be authorized to appoint eight competent miners, one from each bituminous inspection district, each of whom shall have had at least seven years' experience as miners in the bituminous coal mines of this state, who, with eight coal operators, who shall be appointed, one from each of the said bituminous districts by the president judge or president judges of the courts in said inspection district, together with eight mine inspectors of the bituminous region, all of whom shall be citizens of Pennsylvania, shall act as commissioners to revise the mine laws and ventilation acts relating to the bituminous coal regions of Pennsylvania, and to report by bill to the legislature at its present session, not later than thirty-five days after its appointment. The miners serving on said commission shall be appointed on the certified recommendation of the miners' labor organizations.

The commissioners shall meet, immediately after their appointment, at Harrisburg, to organize, and a majority of the whole commission shall be necessary to pass upon any question that may be brought before it; and the said eight miners and coal operators shall be paid five dollars per day and expenses for each day actually employed in the work of said commission, not to exceed thirty days, and the mine inspectors shall have their expenses paid for each day actually employed in the work of said commission. A sum necessary to pay the compensation allowed the commissioners and necessary clerical and other expenses shall be provided in the general appropriation bill, and paid upon warrants of the chairman drawn upon the State Treasurer and to be audited by the Auditor General in the usual way.

Extract from the journal

## THE GENERAL LAW ON PUBLIC NUISANCES.

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Any person who shall erect, set up, establish, maintain, keep up or continue, or cause to be erected, set up established, maintained, kept up or continued, any public or common nuisance, shall be guilty of a misdemeanor, and on conviction, shall be sentenced to pay a fine, and suffer an imprisonment, or either, or both, according to the discretion of the court under the circumstances of the case; and where the said nuisance shall be in existence at the time of the conviction and sentence, it shall be lawful for the court, in its discretion, to direct either the defendant or the sheriff of the proper county, at the expense of the defendant, to abate the same.

31 March 1860, § 73.

P. L. 402

P. D. 424.

Public nuisances.





## APPENDIX L.

## ADDITIONS TO LIBRARY.

LIST OF BOOKS RECEIVED FROM NOVEMBER 24, 1890, TO  
NOVEMBER 5, 1891, BY GIFT OR EXCHANGE.

Transactions of the American Institute of Homeopathy, 1890.

Forty-eighth Registration Report of Births, Marriages and Deaths in the State of Massachusetts for the year 1889.

Transactions of the Ohio Medical Society.

Report of the State Board of Health of West Virginia for 1889 and 1890.

Circulars of the State Board of Health of New Jersey.

Medical Education, Medical Colleges and the Regulations and Practice of Medicine in United States and Canada. By Dr. John H. Rauch, Springfield, Ill. Seven copies.

United States Department of Agriculture, Special Report on Diseases of the Horse. Hon. J. M. Rusk, Secretary.

Weekly Abstracts of Sanitary Reports. U. S. M. H. S., Washington, D. C. Vol. 5. 1890.

Thirteenth Annual Report of the State Board of Health of New Jersey.

Thirteenth Report of the State Board of Health of Minnesota for 1889 and 1890.

Examination of Water Supplies, State Board of Health of Massachusetts.

Thirteenth Annual Report of the State Board of Health of Connecticut. Seven copies.

First Annual Report of the Board of Commissioners of Lunacy for the State of New Hampshire for 1890. Dr. Irving A. Watson.

Tenth Annual Report of the Registration and Return of Births, Marriages and Deaths in New Hampshire for 1889. Dr. Irving A. Watson.

Transactions of the New York State Medical Association, 1890.

Sixth Annual Report of the State Board of Health of Kansas for 1890.

Fourth Annual Report of the Agricultural Experiment Station, University of Nebraska. Hudson H. Nicholson, Director.

Annual Report of the Board of Public Charities of Pennsylvania for 1890.

Forty-eighth Annual Report of the Philadelphia Board of Trade. Willis R. Tucker, Secretary.

Proceeding of the Twenty-first Annual Meeting of the National Board of Trade, held in New Orleans, 1890. Willis R. Tucker, Secretary.

Report of the Health of the City of Birmingham, England, 1890. Dr. Alfred Hill, Health Officer.

Annual Report of the Board of Health of the City of Toledo, Ohio, 1890.

Annual Report of Births, Marriages and Deaths in the Province of Ontario, Canada, for the year 1889. H. S. Crewe, Inspector.

Seventeenth Annual Report of the State Board of Health of Michigan for 1889. Eight copies.

Purification of Sewage and Water, by Hiram F. Mills, member of the State Board of Health of Massachusetts.

Eleventh Annual Meeting of the American Waterworks Association. J. M. Diven, Elmira, Secretary.

Annual Report of the Bureau of Health of Philadelphia.

Thirteenth Report of the State Board of Health of Wisconsin. Eight copies.

Twenty-fourth Annual Report of the Department of the Health of Cincinnati, 1890.

Annual Report for 1890 of the Water Department of Philadelphia.

Pamphlet Laws of Pennsylvania, Session of 1891. Five copies. Hon. Wm. F. Harrity. Secretary of the Commonwealth.

Transactions of State Medical Association of Texas for 1891.

Third Biennial Report of the North Carolina State Board Health for 1889-1890. Five copies.

Third Annual Report of the Department of Public Safety of Pittsburg, 1890. Five copies.

Eleventh Annual Report relating to Water Supplies of the State Board of Health of New York. Four copies.

Eleventh Annual Report of the State Board of Health of New York.

Ninth Annual Report of the Provincial Board of Health of Ontario, Canada. Two copies.

Transactions of the New York Academy of Medicine for the year 1891.

Thirteenth Annual Report of the State Board of Health of Rhode Island. Five copies.

Special Report on the Causes and Prevention of Swine Plague. Hon. J. M. Rusk, Secretary of Agriculture.

Manual of the Health Laws of the State of Ohio.

Ninth Annual Report of the State Board of Health of Indiana.

The Report of the Board of Health of the State Alabama for the year 1889.

Reports of Papers of the American Public Health Association.

Tenth Annual Report of the Board of Health of the City of Detroit, Michigan.

Twenty-second Annual Report of the State Board of Health of Massachusetts.

Geological Survey of Pennsylvania. Four copies

**LIST OF PAMPHLETS RECEIVED FROM NOVEMBER  
24, 1890, TO NOVEMBER 5, 1891, BY GIFT OR  
EXCHANGE.**

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Ninth Annual Report of the Board of Health of the City of Detroit, Michigan for 1890 and 1889.

Transactions of the Maine Medical Society for 1890.

Transactions of the New Hampshire Medical Society for 1890.

Report of the State of Public Health in the City of Dublin for the year 1889. Sir Chas. A. Cameron.

Disposal of Sewage, by Rudolph Herring, C. E., New York, N. Y.

Report of Surveyor-General of the United States Army.

Proceedings and Papers of a Sanitary Convention at Lapeer, Michigan.

Laws relating to Health of the State of Michigan 1890.

Report of the Sanitary state of the City of Montreal, Canada, being the Annual Report of the Board of Health of the City.

Report of Inspection of the Sewerage Systems of three European Cities, by P. D. Keyser, M. D., 1832 Arch street, Philadelphia.

Annual Report of the Health Department of the City of Baltimore for 1890. Dr. Geo. H. Rohe, Health Commissioner.

Annual Report of the Supervising Surgeon General of the United States Marine Hospital Service for 1889. Dr. John B. Hamilton.

Eleventh Biennial Report of the Illinois. Soldiers' Orphan Home at Normal. Dr. N. B. Cole, Bloomington, Ill.

Annual Report of the Health Department of the City of Cleveland, Ohio.

Report of the Board of Health of the City of Reading, 1890.

Proceedings and Papers of a Sanitary Convention at Battle Creek, Michigan. Dr. Henry B. Baker.

Sixth Annual Report of the Board of Health of the City of Portland, Maine.

Sixth Annual Report of the Board of Health of the City of Altoona, Pa.

Sixth Annual Report of the Board of Health of Newport, R. I.

Cause and Prevention of Diphtheria. American Public Health Association. Dr. Irving A. Watson.

What is Forestry? Hon. J. M. Rusk, Secretary of Agriculture.

Railroad Maps of the State of Pennsylvania. Thomas J. Stewart, Secretary of Internal Affairs. Seventeen copies.



LIST OF BOOKS PURCHASE FROM NOVEMBER 24, 1890, TO  
NOVEMBER 5, 1891.

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Water Supply, by Nichols. \$2.00

A Move for Better Roads. \$3. 00

MEDICAL AND SANITARY PERIODICALS RECEIVED FROM  
NOVEMBER 7, 1889, TO NOVEMBER 13, 1891.

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Abstract of Sanitary Reports. Published at the Marine Hospital Bureau, Washington, D. C. Exchange. Weekly.

Annals of Hygiene. Published by Sanitary Publishing Company. Exchange. Monthly.

The Monthly Bulletin. A Record of Sanitary Progress, Public Health and Mortality. Rhode Island State Board of Health. Monthly. Free.

Bulletin of the North Carolina State Board of Health. Monthly. Exchange.

Public Health in Minnesota. Minnesota State Board of Health. Monthly. Exchange.

State Board of Health Bulletin of Tennessee. Monthly. Exchange.

The Sanitary Inspector. State Board of Health of Maine. Monthly. Exchange.

Monthly Bulletin of the Iowa State Board of Health. Exchange.

The Monthly Sanitary Record. Ohio State Board of Health. Exchange.

Journal D'Hygiène Populaire. Conseil. Provincial d'Hygiène et de la Société d'Hygiène de la Province de Québec. Exchange.

The Medical and Surgical Reporter. Weekly. Exchange.

New England Medical Monthly. Exchange.

Lehigh Valley Medical Magazine. Monthly. Exchange.

The Sanitary News. Weekly. By subscription.

The Journal of the American Medical Association. Weekly. By subscription.

The Medico-Legal Journal. Monthly. By subscription.

The Journal of Comparative Medicine and Veterinary Archives. Monthly. By subscription.

The Sanitarian. Monthly. By subscription.

Annual of the Universal Medical Sciences. Five volumes. By subscription.

Anti Adulteration Journal.

## APPENDIX M.

## FOURTH ANNUAL REPORT

OF THE

## STATE PHARMACEUTICAL EXAMINING BOARD

OF

## PENNSYLVANIA.

MONTROSE, PA., *October 24, 1891.*To His Excellency ROBERT E. PATTISON, *Governor:*

SIR: In compliance with the provisions of section four of the act to regulate the practice of pharmacy and sale of poisons, and to prevent adulteration in drugs and medicinal preparations in the State of Pennsylvania, approved May 24, 1887, I have the honor to transmit the fourth annual report of the board, for the year ending June 30, 1891.

Very respectfully,

A. B. BURNS,  
*Secretary.*



MEMBERS OF THE BOARD.

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ALONZO ROBBINS, President, . . . . Philadelphia.  
ANDREW B. BURNS, Secretary, . . . . Montrose.  
ADOLPH J. TAFEL, Treasurer, . . . . Philadelphia.  
CHARLES T. GEORGE, . . . . Harrisburg.  
LOUIS EMANUEL, . . . . Pittsburgh.





## REPORT.

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The board has held four meetings and examinations during the year ending June 30, 1891.

The first was held in the High School at Williamsport, on Tuesday, July 8, 1890. Forty-one applicants appeared for examination; twenty-five applying for registered pharmacists' certificates, and sixteen for qualified assistants' certificates. Ten of each class were successful.

The first session of the second meeting was held in the Central High School at Philadelphia, on Monday, October 6; and the second session in the College of Pharmacy at Pittsburgh, on Tuesday, October 7, 1890. One hundred and ninety-seven applicants appeared for examination; one hundred and seventeen applying for registered pharmacists' certificates, and eighty for qualified assistants' certificates. Forty-eight of the former and forty-nine of the latter class were successful.

The third meeting was held in the Central High School at Philadelphia, on Monday, January 19, 1891. One hundred and ninety-eight applicants appeared for examination; one hundred and nine applying for registered pharmacists' certificates, and eighty-nine for qualified assistants' certificates. Thirty of the former and fifty-one of the latter class were successful.

The fourth meeting of the year was held in the Girls' High School at Harrisburg on Saturday, April 25, 1891. One hundred and fifty-six applicants appeared for examination; one hundred and seven applying for registered pharmacists' certificates, and forty-nine for qualified assistants' certificates. Seventy-one of the former and thirty-eight of the latter class were successful.

The number of persons examined during the year was five hundred and ninety-two, the number who succeeded in passing the examination was three hundred and seven. The number of persons registered during the year, under the provisions of section eleven, and by examination, was three hundred and fifty-eight.

The total number of certificates issued up to June 30, 1891, is six thousand five hundred and sixty, of which number one thousand six hundred and fifty-four are qualified assistants.

An alphabetical list of registered pharmacists and qualified assistants, revised up to June 30, 1891, is herewith appended.

Balance of money on hand at last report, one thousand and ninety-one dollars and ninety-six cents (\$1,091.96); amount received during the year, five thousand three hundred and fifty-six dollars (\$5,356.00); total, six thousand four hundred and forty-seven dollars and ninety-six cents (\$6,447.96).

Amount disbursed during the year, two thousand six hundred and seventy-three dollars and sixty-nine cents (\$2,673.69).

Balance on hand June 30, 1891, three thousand seven hundred and seventy-four dollars and twenty-seven cents (\$3,774.27).

The large increase of receipts was due to the triennial renewal of registration. A detailed statement by the treasurer is herewith appended.

F. H. EGGERS, *Treasurer, in account with the State Pharmaceutical Examining Board of Pennsylvania.*

| Dr.      |                                   |            | Warrants. | Cr.                                       |
|----------|-----------------------------------|------------|-----------|-------------------------------------------|
| 1890.    |                                   |            |           |                                           |
| July 22. | To balance on hand, . . . . .     | \$1,091 96 | July 24.  | By cash, H. B. Cochran, . . . 90 \$100 00 |
| Oct. 18. | To cash from H. B. Cochran, . . . | 3,239 35   | " "       | By cash, A. B. Burns, . . . 91 92 70      |
| 1891:    |                                   |            | " "       | By cash, H. B. Cochran, . . . 92 60 75    |
| Mar. 9.  | To cash from H. B. Cochran, . . . | 1,765 69   | " "       | By cash, A. J. Tafel, . . . 93 57 13      |
| May 21.  | To cash from H. B. Cochran, . . . | 351 00     | " "       | By cash, Alonzo Robbins, . . . 94 136 81  |
|          |                                   |            | " "       | By cash, F. H. Eggers, . . . 95 87 70     |
|          |                                   |            | " "       | By cash, Elwood Greist, . . . 96 100 00   |
|          |                                   |            | " "       | By cash, Lane, Examiner, . . . 97 43 75   |
|          |                                   |            | " "       | By cash, Elwood Greist, . . . 98 100 00   |
|          |                                   |            | Oct. 22.  | By cash, H. L. Trout, . . . 99 4 50       |
|          |                                   |            | " "       | By cash, A. J. Tafel, . . . 100 98 82     |
|          |                                   |            | " "       | By cash, J. B. Samson, . . . 101 111 25   |
|          |                                   |            | " "       | By cash, A. B. Burns, . . . 102 180 80    |
|          |                                   |            | " "       | By cash, Examiner, . . . 103 98 61        |
|          |                                   |            | " "       | By cash, H. B. Cochran, . . . 104 99 94   |
|          |                                   |            | " "       | By cash, Alonzo Robbins, . . . 105 161 72 |
|          |                                   |            | " "       | By cash, F. H. Eggers, . . . 106 78 20    |
|          |                                   |            | 1891.     |                                           |
|          |                                   |            | Feb. 16.  | By cash, Alonzo Robbins, . . . 107 89 90  |
|          |                                   |            | " "       | By cash, A. B. Burns, . . . 108 127 45    |
|          |                                   |            | " "       | By cash, Examiner, . . . 109 16 75        |
|          |                                   |            | " "       | By cash, H. B. Cochran, . . . 110 64 58   |
|          |                                   |            | " "       | By cash, A. J. Tafel, . . . 111 82 25     |
|          |                                   |            | " "       | By cash, J. B. Samson, . . . 112 27 34    |
|          |                                   |            | " "       | By cash, F. H. Eggers, . . . 113 149 10   |
|          |                                   |            | May 15.   | By cash, Alonzo Robbins, . . . 114 199 52 |
|          |                                   |            | " "       | By cash, F. H. Eggers, . . . 115 101 81   |
|          |                                   |            | " "       | By cash, A. J. Tafel, . . . 116 53 75     |
|          |                                   |            | " "       | By cash, H. B. Cochran, . . . 117 18 90   |
|          |                                   |            | " "       | By cash, A. B. Burns, . . . 118 108 18    |
|          |                                   |            | " "       | By cash, J. B. Samson, . . . 119 30 22    |
|          |                                   |            | " "       | By cash, Examiner, . . . 120 39 25        |
|          |                                   |            | " "       | By cash, H. L. Trout, . . . 121 2 50      |
|          |                                   |            | " "       | By cash, to balance, . . . . . 3,774 27   |
|          |                                   | 6,447 96   |           | \$6,447 96                                |
| 1891.    |                                   |            |           |                                           |
| May 15.  | To cash in treasury, . . . . .    | \$3,774 27 |           |                                           |

ALLEGHENY, PA., June 22, 1891.

Respectfully submitted.

F. H. EGGERS,  
*Treasurer of the State Pharmaceutical Examining Board.*

## Registered Pharmacists of Pennsylvania.

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|                           |                                      |                        |
|---------------------------|--------------------------------------|------------------------|
| Abadie, Victor J., . . .  | 13 S. Thirteenth street, . . . . .   | Philadelphia.          |
| Abel, Caroline A., . . .  | Turbotville, . . . . .               | Northumberland county. |
| Abell, William W., . . .  | Frankford and Girard avenues, . . .  | Philadelphia,          |
| Aber, Leonidas, . . . .   | White Ash, . . . . .                 | Allegheny county.      |
| Achre, Cyrus J., . . . .  | Greenville, . . . . .                | Mercer county.         |
| Acker, Charles N., . . .  | Tenth and Thompson streets, . . .    | Philadelphia.          |
| Acker, Louis K., . . . .  | Franklin, . . . . .                  | Venango county.        |
| Ackerman, A. K., . . . .  | Turbotville. . . . .                 | Northumberland county. |
| Acomb, James L., . . . .  | Tidioute, . . . . .                  | Warren county.         |
| Adams, Frank A., . . . .  | 153 E. Sixteenth street, . . . . .   | Erie.                  |
| Adamson, Thomas H., . .   | Cochranon, . . . . .                 | Crawford county.       |
| Adamson, Winfield S., .   | Waynesburg, . . . . .                | Greene county.         |
| Addis, Simon D., . . . .  | E. Third street, . . . . .           | South Bethlehem.       |
| Agnew, Edwin I., . . . .  | 913 Liberty street, . . . . .        | Pittsburgh.            |
| Agrelius, John W., . . .  | Youngsville, . . . . .               | Warren county.         |
| Agthe, John F. O., . . .  | 2300 Master street, . . . . .        | Philadelphia.          |
| Aiken, James, . . . . .   | Berwin, . . . . .                    | Chester county.        |
| Aitken, John W., . . . .  | Main and Salem streets, . . . . .    | Carbondale.            |
| Aitken, R. Barclay, . . . | Bart, . . . . .                      | Lancaster county.      |
| Aitken, T. Benton, . . .  | West Chester, . . . . .              | Chester county.        |
| Albright, Franklin P., .  | 720 Berks street, . . . . .          | Philadelphia.          |
| Aldenderfer, Samuel, . .  | Greenville, . . . . .                | Mercer county.         |
| Aldinger, C. D., . . . .  | Millerstown, . . . . .               | Butler county.         |
| Alexander, Henry, . . . . | Callensburg, . . . . .               | Clarion county.        |
| Alexander, Nancy, . . . . | Callensburg, . . . . .               | Clarion county.        |
| Alexander, Wm A., . . . . | Everett, . . . . .                   | Bedford county.        |
| Alleman, Emanuel A., . .  | 160 S. Front street, . . . . .       | Milton.                |
| Allen, Daniel B., . . . . | Wattsburg, . . . . .                 | Erie county.           |
| Allen, G. E., . . . . .   | Rochester, . . . . .                 | Beaver county.         |
| Allen, J. H., . . . . .   | 700 Seventh avenue, . . . . .        | Altoona.               |
| Allen, John M., . . . .   | 422 Witherill street, . . . . .      | Philadelphia.          |
| Allen, John M., . . . .   | Titusville, . . . . .                | Crawford county.       |
| Allis, Irving M., . . . . | Wyalusing, . . . . .                 | Bradford county.       |
| Allison, Robert L., . . . | Coultersville, . . . . .             | Butler county.         |
| Allison, Robert W., . . . | Wilkinsburg, . . . . .               | Allegheny county.      |
| Alsbaugh, Frank S., . . . | Mercer, . . . . .                    | Mercer county.         |
| Altman, William H., . . . | Punxsutawney, . . . . .              | Jefferson county.      |
| Ames, Newton F., . . . .  | Corry, . . . . .                     | Erie county.           |
| Amick, John H. B., . . .  | 2059 N. Thirteenth street, . . . . . | Philadelphia.          |
| Ammon, George W., . . .   | 317 Penn street, . . . . .           | Reading.               |
| Ammon, Jacob S., . . . .  | 317 Penn street, . . . . .           | Reading.               |
| Ancona, Charles P., . . . | 307 High street, . . . . .           | Pottstown.             |
| Ancona, Edward P., . . .  | 307 High street, . . . . .           | Pottstown.             |
| Anderson, A. C., . . . .  | Foxburg, . . . . .                   | Clarion county.        |
| Anderson, George H., . .  | Waynesburg, . . . . .                | Greene county.         |
| Anderson, George R., . .  | Portland, . . . . .                  | Northampton county.    |
| Anderson, Harriet L., . . | West Bridgewater, . . . . .          | Beaver county.         |
| Anderson, Harry H., . . . | 4319 Main street, . . . . .          | Manayunk.              |
| Anderson, Joseph E., . .  | 255 Federal street, . . . . .        | Allegheny.             |
| Anderson, Thos. A., . . . | West Bridgewater, . . . . .          | Beaver county.         |
| Andes, John B., . . . .   | Honey Brook, . . . . .               | Chester county.        |
| Andrews, Fred. O., . . .  | Avondale, . . . . .                  | Chester county.        |



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| Andriessen, Hugo, . . .        | Third and Diamond streets, . . .        | Beaver.              |
| Angney, John R., . . .         | Fifth and Spruce streets, . . . .       | Philadelphia.        |
| Angney, Joseph S., Jr., . . .  | Front street and Susquehanna av., . . . | Philadelphia.        |
| Angney, William M., . . .      | 519 Spruce street, . . . . .            | Philadelphia.        |
| Anhalt, Herman, . . .          | 142 N. Fifteenth street, . . . . .      | Philadelphia.        |
| Anspach, Paul B., . . .        | Eighth and Green streets, . . . .       | Philadelphia.        |
| Anthes, Philip, . . .          | 160 Girard avenue, . . . . .            | Philadelphia.        |
| Antill, Joseph V., . . .       | 2300 N. Fifth street, . . . . .         | Philadelphia.        |
| Anwyl, James W., . . .         | Parsons, . . . . .                      | Luzerne county.      |
| Appeldorn, Ernest F., . . .    | 2028 Howard street, . . . . .           | Philadelphia.        |
| Appenzeller, Geo. W., . . .    | 5150 Franklin street, . . . . .         | Philadelphia.        |
| Appenzeller, Gustave, . . .    | 630 S. Eleventh street, . . . . .       | Philadelphia.        |
| Apple, Ammon, . . .            | 2301 N. Second street, . . . . .        | Philadelphia.        |
| Apple, Franklin M., . . .      | Fifth and Cambria streets, . . . .      | Philadelphia.        |
| Apple, Milton S., . . .        | 2862 N. Fifth street, . . . . .         | Philadelphia.        |
| Appleton, Robert H., . . .     | East Warren, . . . . .                  | Warren county.       |
| Archibald, Henry C., . . .     | 1601 Passyunk avenue, . . . . .         | Philadelphia.        |
| Archibald, Maria G., . . .     | 1601 Passyunk avenue, . . . . .         | Philadelphia.        |
| Armor, Alpheus, . . .          | 67 Taylor avenue, . . . . .             | Allegheny.           |
| Armstrong, Alvin B., . . .     | Smethport, . . . . .                    | McKean county.       |
| Armstrong, Benj., . . .        | 6 W. Market street, . . . . .           | Wilkes-Barre.        |
| Armstrong, C. O., . . .        | Milford, . . . . .                      | Pike county.         |
| Armstrong, Emma C., . . .      | Troy, . . . . .                         | Bradford county.     |
| Armstrong, Geo. B., . . .      | Troy, . . . . .                         | Bradford county.     |
| Armstrong, Jas., Jr., . . .    | Greensburg, . . . . .                   | Westmoreland county. |
| Armstrong, John C., . . .      | Brownsville, . . . . .                  | Fayette county.      |
| Armstrong, Jos. D., . . .      | Brownsville, . . . . .                  | Fayette county.      |
| Armstrong, Neri, . . .         | Carmichaels, . . . . .                  | Greene county.       |
| Armstrong, Wm. K., . . .       | 101 E. Third street, . . . . .          | Williamsport,        |
| Arnold, Annie B., . . .        | Sixth and Harris streets, . . . .       | Harrisburg.          |
| Arnold, Calvin M., . . .       | 1601 N. Sixth street, . . . . .         | Harrisburg.          |
| Arnold, George P., . . .       | Canonsburg, . . . . .                   | Washington county.   |
| Arnold, Jacob A., . . .        | Houtzdale, . . . . .                    | Clearfield county.   |
| Arters, William J., . . .      | 105 Main street, . . . . .              | Washington.          |
| Aschenbach, Fred., . . .       | 400 N. Third street, . . . . .          | Philadelphia.        |
| Asheom, John W., . . .         | Renovo, . . . . .                       | Clinton county.      |
| Ashenfelter, W. J., . . .      | 155 High street, . . . . .              | Pottstown.           |
| Ashmead, Alfred C., . . .      | 1041 Walnut street, . . . . .           | Philadelphia.        |
| Ashmead, Anna S., . . .        | 2101 Fitzwater street, . . . . .        | Philadelphia.        |
| Ashmead, Benj. P., . . .       | 3045 Gray's Ferry Road, . . . . .       | Philadelphia.        |
| Ashmead, Horace E., . . .      | 2101 Fitzwater street, . . . . .        | Philadelphia.        |
| Ashmead, Thomas E., . . .      | 1041 Walnut street, . . . . .           | Philadelphia.        |
| Ashton, Charles B., . . .      | 511 Cherry street, . . . . .            | Norristown.          |
| Aston, Ernest E., . . .        | Taylorville, . . . . .                  | Lackawanna county.   |
| Atkinson, Andrew J., . . .     | Lewistown, . . . . .                    | Mifflin county.      |
| Aubley, Samuel, . . .          | Scottdale, . . . . .                    | Westmoreland county. |
| Aucker, Louis, . . .           | 1942 Nicholas street, . . . . .         | Philadelphia.        |
| Aughinbaugh, C. H., . . .      | Clearfield, . . . . .                   | Clearfield county.   |
| Aughinbaugh, G. W., Jr., . . . | 233 N. Second street, . . . . .         | Philadelphia.        |
| Aurin, Fred J., . . .          | 150 Main street, . . . . .              | Pittsburgh, W. E.    |
| Avery, L. B., . . .            | Beaumont, . . . . .                     | Wyoming county.      |
| Avery, Ledyard W., . . .       | Centre Moreland, . . . . .              | Wyoming county.      |
| Babbitt, C. O., . . .          | Corry, . . . . .                        | Erie county.         |
| Babbitt, Franklin T., . . .    | Corry, . . . . .                        | Erie county.         |
| Babcock, Wm. C., Jr., . . .    | Blossburg, . . . . .                    | Tioga county.        |
| Bachman, Charles L., . . .     | 109 S. Third street, . . . . .          | Easton.              |

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| Bachmann, Mary, . . .            | 2024 N. Second street, . . . . .         | Philadelphia.          |
| Bachmann, Gustave A., . . .      | 2024 N. Second street, . . . . .         | Philadelphia.          |
| Backinstoe, Harvey F., . . .     | 1200 Callowhill street, . . . . .        | Philadelphia.          |
| Baer, Jacob M., . . . . .        | 302 S. Broad street, . . . . .           | Philadelphia.          |
| Baer, John H., . . . . .         | Evans City, . . . . .                    | Butler county.         |
| Bagge, Edward B., . . . . .      | 3000 Dauphin street, . . . . .           | Philadelphia.          |
| Bahl, Charles H., . . . . .      | 1002 N. Sixth street, . . . . .          | Philadelphia.          |
| Bahl, Charles Z., . . . . .      | 1002 N. Sixth street, . . . . .          | Philadelphia.          |
| Bailey, Elmer E., . . . . .      | Sinnamahoning, . . . . .                 | Cameron county.        |
| Baily, Henry T., . . . . .       | Tremont, . . . . .                       | Schuylkill county.     |
| Baird, David R., . . . . .       | 140 Market street, . . . . .             | Johnstown.             |
| Baird, John R., . . . . .        | Brockwayville, . . . . .                 | Jefferson county.      |
| Baker, A. M., . . . . .          | Hemlock, . . . . .                       | Cambria county.        |
| Baker, Clinton D., . . . . .     | Spring Creek, . . . . .                  | Warren county.         |
| Baker, E. H., . . . . .          | 215 W. Fourth street, . . . . .          | Williamsport.          |
| Baker, John G., . . . . .        | 1403 N. Front street, . . . . .          | Philadelphia.          |
| Baker, John J., Jr., . . . . .   | White Haven, . . . . .                   | Luzerne county.        |
| Baker, Nellie, . . . . .         | West Grove, . . . . .                    | Chester county.        |
| Baker, Sylvester J., . . . . .   | 528 Arch street, . . . . .               | Philadelphia.          |
| Baker, Theodore W., . . . . .    | 639 George street, . . . . .             | Norristown.            |
| Baker, Thomas D., . . . . .      | Lewisburg, . . . . .                     | Union county.          |
| Baker, Thomas J., . . . . .      | 4000 Chestnut street, . . . . .          | Philadelphia.          |
| Baker, Walter T., . . . . .      | Nineteenth and Oxford streets, . . . . . | Philadelphia.          |
| Baker, William G., . . . . .     | 13 Centre square, . . . . .              | Lancaster.             |
| Balbirnie, H. H. D., . . . . .   | 723 S. Ninth street, . . . . .           | Philadelphia.          |
| Baldwin, Abner J., . . . . .     | Kennett Square, . . . . .                | Chester county.        |
| Baldwin, Edward L., . . . . .    | Laceyville, . . . . .                    | Wyoming county.        |
| Baldwin, T. D., . . . . .        | Nelson, . . . . .                        | Tioga county.          |
| Ball, Archie L., . . . . .       | Wyoming, . . . . .                       | Luzerne county.        |
| Ball, Elwood, . . . . .          | Hellerton, . . . . .                     | Northampton county.    |
| Ballantine, Chas. H., . . . . .  | Tenth and Morris streets, . . . . .      | Philadelphia.          |
| Ballinger, Abraham L., . . . . . | 764 W. Fourth street, . . . . .          | Williamsport.          |
| Balph, J. F., . . . . .          | 55 S. Main street, . . . . .             | Butler.                |
| Banks, Lucien, . . . . .         | Mifflintown, . . . . .                   | Juniata county.        |
| Banks, William B., . . . . .     | 736 N. Nineteenth street, . . . . .      | Philadelphia.          |
| Banks, William H., . . . . .     | Patterson, . . . . .                     | Juniata county.        |
| Banner, Peter L., . . . . .      | Verona, . . . . .                        | Allegheny county.      |
| Bantz, Edward F., . . . . .      | 80 Market street, . . . . .              | Pittsburgh.            |
| Barber, Harry L., . . . . .      | 854 N. Tenth street, . . . . .           | Philadelphia.          |
| Barber, Peter M., . . . . .      | 8 Water street, . . . . .                | Pittston.              |
| Barker, Burton C., . . . . .     | 1724 N. Eighteenth street, . . . . .     | Philadelphia.          |
| Barker, James H., . . . . .      | 160 Robinson street, . . . . .           | Allegheny.             |
| Barlow, Louis E., . . . . .      | 3928 Market street, . . . . .            | Philadelphia.          |
| Barn, John C., . . . . .         | Mars, . . . . .                          | Butler county.         |
| Barnard, Charles H., . . . . .   | Fifteenth and Centre streets, . . . . .  | Ashland.               |
| Barnes, Stephen D., . . . . .    | Thompson, . . . . .                      | Susquehanna county.    |
| Barnes, W. Burt, . . . . .       | Mehoopany, . . . . .                     | Wyoming county.        |
| Barnes, William F., . . . . .    | 253 Federal street, . . . . .            | Allegheny.             |
| Barnett, Marion D., . . . . .    | Philipsburg, . . . . .                   | Centre county.         |
| Barnett, S. K., . . . . .        | Alburtis, . . . . .                      | Lehigh county.         |
| Barnitz, John S., . . . . .      | N. W. corner Diamond, . . . . .          | Chambersburg.          |
| Barr, J. Rufus, . . . . .        | West Conshohocken, . . . . .             | Montgomery county.     |
| Barr, Theodore A., . . . . .     | Pinegrove, . . . . .                     | Schuylkill county.     |
| Barr, William T., . . . . .      | 359 E. Chestnut street, . . . . .        | Lancaster.             |
| Barrett, Charles L., . . . . .   | 1201 Spruce street, . . . . .            | Philadelphia.          |
| Barron, Charles A., . . . . .    | Shamokin, . . . . .                      | Northumberland county. |
| Barrowman, Thomas, . . . . .     | 217 Lackawanna avenue, . . . . .         | Scranton.              |

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| Bartges, Aaron L.,     | Logansville,                    | Clinton county.        |
| Barth, Frederick C.,   | 2324 Ritner street,             | Philadelphia.          |
| Barth, Joseph H.,      | Mulberry alley,                 | Pittsburgh.            |
| Bartho, Benjamin F.,   | Mount Carmel,                   | Northumbefland county. |
| Bartleson, Charles L., | Clifton Heights,                | Delaware county.       |
| Bartlett, H. L.,       | 535 S. Eleventh street,         | Philadelphia.          |
| Barton, George W.,     | Clifton Heights,                | Delaware county.       |
| Barton, Samuel T.,     | Plains,                         | Luzerne county.        |
| Barton, Theo. W.,      | Waterford,                      | Erie county.           |
| Barwig, Gustave A.,    | 2024 N. Second street,          | Philadelphia.          |
| Baskin, Mortimer H.,   | 1001 N. Seventh street,         | Harrisburg.            |
| Bassett, Fenwick H.,   | 4408 Frankford avenue,          | Philadelphia.          |
| Bassett, Simpson O.,   | Dunbar,                         | Fayette county.        |
| Batdorff, H. James,    | 742 Christian street,           | Philadelphia.          |
| Bateman, Mary H.,      | Shoustown,                      | Allegheny county.      |
| Bateman, Wm. H. T.,    | 848 Perkiomen street,           | Philadelphia.          |
| Bauer, Louis G.,       | Fifth street and Fairmount ave. | Philadelphia.          |
| Baume, Frank D.,       | 526½ Penn street,               | Reading.               |
| Baumeister, Jos. F.,   | 519 Lackawanna street,          | Scranton.              |
| Baumgardner, C. B.,    | 1617 Eighth avenue,             | Altoona.               |
| Baur, William,         | St. Clair,                      | Schuylkill county.     |
| Bayard, Walter W.,     | 16 N. Allegheny street,         | Bellefonte.            |
| Beach, Clifton H.,     | Shiloh and Sycamore streets,    | Pittsburgh.            |
| Beach, George B.,      | Gordon,                         | Schuylkill county.     |
| Beach, William S.,     | 676 Fifth avenue,               | Pittsburgh.            |
| Beach, William T.,     | Minersville,                    | Schuylkill county.     |
| Beal, Levi C.,         | Farmington,                     | Fayette county.        |
| Beale, Edmond,         | 602 S. Second street,           | Philadelphia.          |
| Beam, Frank,           | 196 Beaver avenue,              | Allegheny.             |
| Beamer, William J.,    | Manor Station,                  | Westmoreland county.   |
| Bean, Oliver W.,       | Harmonsburg,                    | Crawford county.       |
| Bear, John H.,         | 662 N. Tenth street,            | Philadelphia.          |
| Beatty, J. L.,         | Hilliard,                       | Butler county.         |
| Beatty, John,          | 340 N. Second street,           | Philadelphia.          |
| Beaver, Samuel,        | Annville,                       | Lebanon county.        |
| Bebout, John J.,       | 614 Walnut street,              | McKeesport.            |
| Bebout, William I.,    | Darlington,                     | Beaver county.         |
| Bechtel, Joseph Y.,    | Schwenkville,                   | Montgomery county.     |
| Bechtold, Elizabeth,   | 401 N. Orange street,           | Lancaster.             |
| Bechtold, Thomas D.,   | 401 N. Orange street,           | Lancaster.             |
| Beck, Addison L.,      | 239 State street,               | Sharon.                |
| Beck, Adolph,          | 52 S. Twelfth street,           | Pittsburgh.            |
| Beck, Alphonse P.,     | 237 Ohio street,                | Allegheny.             |
| Beck, Charles T.,      | Sharpsburg,                     | Allegheny county.      |
| Beck, John,            | 127 Wylie avenue,               | Pittsburgh.            |
| Beck, Robert W.,       | 119 N. Eleventh street,         | Philadelphia.          |
| Beck, William L.,      | 3 Herron avenue,                | Pittsburgh.            |
| Beckler, Warren B.,    | 239 S. Eleventh street,         | Philadelphia.          |
| Beckley, George A.,    | Twelfth av. and Twelfth street, | Altoona.               |
| Beckley, James P.,     | 201 Carson street,              | Pittsburgh.            |
| Beckwith, James W.,    | 859 N. Thirteenth street,       | Philadelphia.          |
| Bedford Andrew,        | Waverly,                        | Lackawanna county.     |
| Bedford, Sterling,     | Waverly,                        | Lackawanna county.     |
| Behringer, Albert C.,  | 2505 Orkney street,             | Philadelphia.          |
| Beidler, Samuel M.,    | 341 Girard avenue,              | Philadelphia.          |
| Beighley, William A.,  | Second avenue,                  | Pittsburgh.            |
| Bell, John W.,         | 36 Western avenue,              | Allegheny.             |

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| Bell, Perry A., . . . .        | Millerstown, . . . . .                        | Butler county.       |
| Bell, William, . . . .         | 1840 Wharton street, . . . . .                | Philadelphia.        |
| Bell, William, Jr., . . . .    | 1840 Warton street, . . . . .                 | Philadelphia.        |
| Belcher, C. E., . . . .        | Morrisdale Mines, . . . . .                   | Clearfield county.   |
| Bellman, Samuel L., . . . .    | 4755 Butler street, . . . . .                 | Pittsburgh.          |
| Bender, Abner S., . . . .      | 187 Forty-fifth street, . . . . .             | Pittsburgh.          |
| Bender, George H., . . . .     | Jonestown, . . . . .                          | Lebanon county       |
| Bender, William B., . . . .    | 619 N. Second street (deceased), . . . . .    | Harrisburg.          |
| Bender, Wm. J., Jr., . . . .   | 114 N. Twenty-first street, . . . . .         | Philadelphia.        |
| Benford, George W., . . . .    | Somerset, . . . . .                           | Somerset county.     |
| Benjamin, Samuel N., . . . .   | 127 Penn avenue, . . . . .                    | Scranton.            |
| Benn, Wallace B., . . . .      | Arch and Ohio streets, . . . . .              | Allegheny.           |
| Benner, Isaac, . . . .         | 2002 Tioga street, . . . . .                  | Philadelphia.        |
| Bennett, Ash D., . . . .       | New Washington, . . . . .                     | Clearfield county.   |
| Bennett, Calvin W., . . . .    | 284 S. Main street, . . . . .                 | Wilkes-Barre.        |
| Bennum, Charles, . . . .       | 500 Christian street, . . . . .               | Philadelphia.        |
| Bentley, Percival W., . . . .  | 764 W. Fourth street, . . . . .               | Williamsport.        |
| Berger, Carlton D., . . . .    | N. W. cor. Twelfth and Poplar sts., . . . . . | Philadelphia.        |
| Bergner, Carl F. G., . . . .   | 834 Penn street, . . . . .                    | Reading.             |
| Beringer, George M., . . . .   | 528 Arch street, . . . . .                    | Philadelphia.        |
| Berlin, James O., . . . .      | Pen Argyl, . . . . .                          | Northampton county.  |
| Bernardy, Emile S., . . . .    | 221 S. Eleventh street, . . . . .             | Philadelphia.        |
| Berret, Arthur F., . . . .     | 1435 S. Fifteenth street, . . . . .           | Philadelphia.        |
| Berry, Charles L., . . . .     | Johnstown, . . . . .                          | Cambria county.      |
| Berryhill, Henry P., . . . .   | Vanderbilt, . . . . .                         | Fayette county.      |
| Beshore, Ellsworth S., . . . . | 155 High street, . . . . .                    | Pottstown.           |
| Besore, Abraham L., . . . .    | Shippensburg, . . . . .                       | Cumberland county.   |
| Best, Austin, . . . .          | Steeltown, . . . . .                          | Dauphin county.      |
| Bethel, Bennett N., . . . .    | 632 N. Sixteenth street, . . . . .            | Philadelphia.        |
| Betts, T. Everett, . . . .     | 643 N. Thirty-sixth street, . . . . .         | Philadelphia.        |
| Beyer John J., . . . .         | 418 W. Norris street, . . . . .               | Philadelphia.        |
| Beyer, Joseph M., . . . .      | Punxsutawney, . . . . .                       | Jefferson county.    |
| Bichy, William, . . . .        | 5561 Germantown avenue, . . . . .             | Philadelphia.        |
| Bickel, Harry L., . . . .      | 1412 Walnut street, . . . . .                 | Philadelphia.        |
| Bickley, Milton H., . . . .    | Chester, . . . . .                            | Delaware county.     |
| Bickley, Mortimer H., . . . .  | Chester, . . . . .                            | Delaware county.     |
| Biddle, Charles J., . . . .    | 3348 Market street, . . . . .                 | Philadelphia.        |
| Biery, William F., . . . .     | Weissport, . . . . .                          | Carbon county.       |
| Biever, John A., . . . .       | 417 Twenty-second street, . . . . .           | Lebanon.             |
| Bigony, Lorenzo S., . . . .    | Lansdale, . . . . .                           | Montgomery county.   |
| Bilderback, Jos. B., . . . .   | 3938 Locust street, . . . . .                 | Philadelphia.        |
| Bille, George, . . . .         | 1251 N. Second street, . . . . .              | Philadelphia.        |
| Billich, H. F., . . . .        | Courtney, . . . . .                           | Washington county.   |
| Billings, F. T., . . . .       | Le Raysville, . . . . .                       | Bradford county.     |
| Billings, George E., . . . .   | Le Raysville, . . . . .                       | Bradford county.     |
| Billtein, Nicolaus, . . . .    | Chester, . . . . .                            | Delaware county.     |
| Bimber, George L., . . . .     | 62 Irwin avenue, . . . . .                    | Allegheny county.    |
| Bing, Edward W., . . . .       | Chester, . . . . .                            | Delaware county.     |
| Bingham, Frank O., . . . .     | Sutersville, . . . . .                        | Westmoreland county. |
| Binkley, G. K., . . . .        | Orwigsburg, . . . . .                         | Schuylkill county.   |
| Birch, Benjamin J., . . . .    | Greensboro', . . . . .                        | Greene county.       |
| Birch, Margaret D., . . . .    | Port Carbon, . . . . .                        | Schuylkill county.   |
| Birch, Thomas J., . . . .      | Port Carbon, . . . . .                        | Schuylkill county.   |
| Birchard, Alonzo D., . . . .   | Cambridgeboro', . . . . .                     | Crawford county.     |
| Birchard, E. L., . . . .       | Cambridgeboro', . . . . .                     | Crawford county.     |
| Birchard, George G., . . . .   | Cambridgeboro', . . . . .                     | Crawford county.     |
| Birchard, H. C., . . . .       | Baldwin, . . . . .                            | Butler county.       |



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| Bird, Wellington H.,   | Allentown,                       | Lehigh county.      |
| Birmingham, L. Z.,     | Belle Vernon,                    | Fayette county.     |
| Bittler, Harry,        | 237 S. Ninth street,             | Reading.            |
| Bixler, Samuel H. C.,  | Greencastle,                     | Franklin county.    |
| Blachly, Frank L.,     | Clarksville,                     | Greene county.      |
| Blachly, H. S.,        | Waynesburg,                      | Greene county.      |
| Black, Jacob H.,       | 217 Fifth street,                | Huntingdon.         |
| Black, James B.,       | Coultersville,                   | Allegheny county.   |
| Black, William M.,     | Boston,                          | Allegheny county.   |
| Blackburn, Dewers S.,  | 3343 Penn avenue,                | Pittsburgh.         |
| Blackburn, John M.,    | 388 Fifth avenue,                | Pittsburgh.         |
| Blackburn, Robert P.,  | Lock Haven,                      | Clinton county.     |
| Blackman, Daniel G.,   | Kinzua,                          | Warren county.      |
| Blackman, L. P.,       | Le Raysville,                    | Bradford county.    |
| Blackmon, Clarence T., | Harmony,                         | Butler county.      |
| Blair, Andrew,         | 800 Walnut street,               | Philadelphia.       |
| Blair, George,         | Corry,                           | Erie county.        |
| Blair, H. C.,          | Eighth and Walnut streets,       | Philadelphia.       |
| Blair, Ira A.,         | Adamsville,                      | Crawford county.    |
| Blair, John S.,        | Corry,                           | Erie county.        |
| Blair, Marcus A.,      | Hop Bottom,                      | Susquehanna county. |
| Blair, Samuel C.,      | 2842 Ridge avenue,               | Philadelphia.       |
| Blair, William H.,     | Adamsville,                      | Crawford county.    |
| Blakeslee, William R., | Forest City,                     | Susquehanna county. |
| Blandy, N. P. R.,      | Madera,                          | Clearfield county.  |
| Bleiler, Charles A.,   | Frackville,                      | Schuylkill county.  |
| Blesse, William J.,    | Baden,                           | Beaver county.      |
| Bligh, Angie E.,       | Grove City,                      | Mercer county.      |
| Bligh, Leon E.,        | Grove City,                      | Mercer county.      |
| Bligh, William D.,     | Grove City,                      | Mercer county.      |
| Blinkhorn, George,     | 712 Erie street,                 | Philadelphia.       |
| Blithe, Henry,         | 3212 Market street,              | Philadelphia.       |
| Bloes, W. S.,          | Peckville,                       | Lackawanna county.  |
| Blomer, George,        | 1439 S. Sixth street,            | Philadelphia.       |
| Blomer, Geo. D., Jr.,  | 1439 S. Sixth street,            | Philadelphia.       |
| Blood, Roswell P.,     | Brookville,                      | Jefferson county.   |
| Bloom, Erastus S.,     | 1742 Lambert street,             | Philadelphia.       |
| Blouch, Charles H.,    | Lebanon,                         | Lebanon county.     |
| Blough, H. K.,         | Elizabethtown,                   | Lancaster county.   |
| Boas, David K.,        | Evaline av. near Liberty street, | Pittsburgh.         |
| Bobb, Henry,           | East Greenville,                 | Montgomery county.  |
| Bocking, Ginds C.,     | Tyrone,                          | Blair county.       |
| Bodenhorn, Adam,       | Hamburg,                         | Berks county.       |
| Boger, Charles E.,     | 1703 Wallace street,             | Philadelphia.       |
| Boher, Jay H.,         | 205 Market street,               | Harrisburg.         |
| Bohn, Charles H.,      | 901 N. Second street,            | Philadelphia.       |
| Boisnot, Henry S.,     | 5033 Germantown avenue,          | Philadelphia.       |
| Bollinger, Charles W., | 19 N. Pitt street,               | Mercer.             |
| Bollinger, Jesse,      | Hanover,                         | York county.        |
| Bolton, Alfred H.,     | 742 Christian street,            | Philadelphia.       |
| Bond, Charles E.,      | Stroudsburg,                     | Monroe county.      |
| Bond, Harry C.,        | Tamaqua,                         | Schuylkill county.  |
| Bond, Ira L.,          | Tamaqua,                         | Schuylkill county.  |
| Bond, John T.,         | Tamaqua,                         | Schuylkill county.  |
| Bone, Julius D.,       | Dunmore,                         | Lackawanna county.  |
| Bonn, Albert R.,       | 410 Cedar avenue,                | Seranton.           |
| Bonnell, Alex. C.,     | Clinton,                         | Allegheny county.   |

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| Bonney, Walter P., . . .  | 730 State street, . . . . .             | Erie.                |
| Boone, George H., . . .   | Pleasant Valley, . . . . .              | Luzerne county.      |
| Roone, Huzinga M., . .    | Pottstown, . . . . .                    | Montgomery county.   |
| Booth, Frederick S., . .  | 2235 Richmond street, . . . . .         | Philadelphia.        |
| Borard, George W., . . .  | Tionesta, . . . . .                     | Forest county.       |
| Borchert, William H., .   | 1501 N. Tenth street, . . . . .         | Philadelphia.        |
| Borden, Henry H., . . .   | Tioga, . . . . .                        | Tioga county.        |
| Borden, William M., . .   | Columbia, . . . . .                     | Lancaster county.    |
| Borell, Henry A., . . .   | 2043 Chestnut street, . . . . .         | Philadelphia.        |
| Boring, Edwin M., . . .   | 931 Fairmount avenue, . . . . .         | Philadelphia.        |
| Borland, William J., . .  | Uniontown, . . . . .                    | Fayette county.      |
| Borneman, Jos. H., . . .  | Boyertown, . . . . .                    | Berks county.        |
| Bosch, Max, . . . . .     | 1026 Parade street, . . . . .           | Erie.                |
| Bossart, Harry S., . . .  | Latrobe, . . . . .                      | Westmoreland county. |
| Bossert, Henry, . . . .   | 62 S. Main street, . . . . .            | Wilkes-Barre.        |
| Bossler, David J., . . .  | 5083 Main street, . . . . .             | Germantown.          |
| Bostick, Elmer E., . . .  | 2047 E. Cumberland street, . . . . .    | Philadelphia.        |
| Bosworth, Charles H., .   | Osceola, . . . . .                      | Tioga county.        |
| Bott, Harry F., . . . .   | Scottdale, . . . . .                    | Westmoreland county. |
| Bourke, Joseph M., . . .  | 1019 S. Second street, . . . . .        | Philadelphia.        |
| Bouse, A. N., . . . . .   | Saxton, . . . . .                       | Bedford county.      |
| Bouton, Frederick M., .   | 427 S. Washington avenue, . . . . .     | Seranton.            |
| Bowen, George W., . . .   | 2500 N. Broad street, . . . . .         | Philadelphia.        |
| Bowen, Stephen, . . . .   | Blossburg, . . . . .                    | Tioga county.        |
| Bowen, William M., . . .  | 139 Brown street, . . . . .             | Philadelphia.        |
| Bower Addison, . . . .    | Myerstown, . . . . .                    | Lebanon county.      |
| Bower Andrew, . . . .     | Blossburg, . . . . .                    | Tioga county.        |
| Bower, Henry A., . . .    | Sixth and Green streets, . . . . .      | Philadelphia.        |
| Bowers, Augustus, . . .   | Prospect, . . . . .                     | Butler county.       |
| Bowers Charles E., . . .  | 1034 Pine street, . . . . .             | Philadelphia.        |
| Bowers, Luther P., . . .  | 400 N. Fifth street, . . . . .          | Philadelphia.        |
| Bowes, Timothy J. M., .   | 737 Market street, . . . . .            | Philadelphia.        |
| Bowie, Lucien B., Sr., .  | Uniontown, . . . . .                    | Fayette county.      |
| Bowker, Frank, . . . .    | Seventh and Thompson streets, . . . . . | Philadelphia.        |
| Bowman David B., . . .    | 13 Centre square, . . . . .             | Lancaster.           |
| Bowman, Mrs. E. R., . .   | Mill Village, . . . . .                 | Erie county.         |
| Bowman, Geo. M., . . .    | 1828 Frankford avenue, . . . . .        | Philadelphia.        |
| Bowman, Henry C., . . .   | Schuylkill Haven, . . . . .             | Schuylkill county.   |
| Bowman, John M., Jr., .   | 2329 St. Alban's Place, . . . . .       | Philadelphia.        |
| Bowman, Lin. L., . . .    | Schuylkill Haven, . . . . .             | Schuylkill county.   |
| Boyd, Charles N., . . .   | Butler, . . . . .                       | Butler county.       |
| Boyd, Guy H., . . . .     | 19 S. George street, . . . . .          | York.                |
| Boyd, Isaac M., . . . .   | Goldsboro', . . . . .                   | York county.         |
| Boyer, Edward D., . . .   | 515 Front street, . . . . .             | Catasauqua.          |
| Boyer, Edward L., . . .   | 441 Chestnut street, . . . . .          | Philadelphia.        |
| Boyer, George C., . . .   | Hazleton, . . . . .                     | Luzerne county.      |
| Boyer, Wallace, . . . .   | Main and Swede streets, . . . . .       | Norristown.          |
| Boyle, Philip A., . . .   | 1432 N. Second street, . . . . .        | Philadelphia.        |
| Boyle, Raum R., . . . .   | 1432 N. Second street, . . . . .        | Philadelphia.        |
| Boyles, Col. J. C., . . . | 119 N. Eleventh street, . . . . .       | Philadelphia.        |
| Boyles, Robert M., . . .  | DuBois, . . . . .                       | Clearfield county.   |
| Bradenbaugh, R. B., . .   | Millersburg, . . . . .                  | Dauphin county.      |
| Bradford, John M., . . .  | 801 W. Cumberland street, . . . . .     | Philadelphia.        |
| Bradner, Nathaniel R., .  | 514 S. Third street, . . . . .          | Philadelphia.        |
| Brady, Harry F., . . . .  | 1539 W. Dauphin street, . . . . .       | Philadelphia.        |
| Brady, John T., . . . .   | Honesdale, . . . . .                    | Wayne county.        |
| Bragg, James W., . . . .  | Pittston, . . . . .                     | Luzerne county.      |

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| Brallier, George W.,  | Berlin,                           | Somerset county.   |
| Brallier, Jacob L.,   | Lykens,                           | Dauphin county.    |
| Brandt, Irvin J.,     | 741 Franklin street,              | Reading.           |
| Brant, Charles W.,    | York,                             | York county.       |
| Brant, Robert P.,     | Shanksville,                      | Somerset county.   |
| Brashear, Fred. L.,   | 1229 Liberty street,              | Franklin.          |
| Braun, Edward L.,     | 380 Fifth avenue,                 | Pittsburgh.        |
| Braun, Frederick L.,  | 156 Sandusky street,              | Pittsburgh.        |
| Brechbill, McClellan, | Dunbar,                           | Fayette county.    |
| Brehm, Louis,         | 624 Smithfield street,            | Pittsburgh.        |
| Breining, Joseph K.,  | Kutztown,                         | Berks county.      |
| Breisch, Richard R.,  | Ringtown,                         | Schuylkill county. |
| Breisch, William H.,  | White Haven,                      | Luzerne county.    |
| Breneman, M. B.,      | Saxton,                           | Bedford county.    |
| Breninger, Mary A.,   | Kutztown,                         | Berks county.      |
| Brennan, Henry M.,    | Lansdowne,                        | Delaware county.   |
| Brenneman, Geo. M.,   | 5 Baltimore street,               | Gettysburg.        |
| Brenneman, Jesse P.,  | 5 Baltimore street,               | Gettysburg.        |
| Brensinger, Ellen C., | 2530 Columbia avenue,             | Philadelphia.      |
| Brent, Raymond D.,    | 3703 Fifth avenue,                | Pittsburgh.        |
| Brewster, Andrew D.,  | 1011 Carson street,               | Pittsburgh.        |
| Brewster, Mrs. M. A., | 1011 Carson street,               | Pittsburgh.        |
| Brewster, Wm. M.,     | 2712 E. Somerset street,          | Philadelphia.      |
| Bridger, Paul,        | 745 Spring Garden street,         | Philadelphia.      |
| Briesenick, Chas. W., | 609 S. Ninth street,              | Philadelphia.      |
| Briggs, Jacob F.,     | Shickshinny,                      | Luzerne county.    |
| Bright, Annie L.,     | Frackville,                       | Schuylkill county. |
| Bright, Wilford M.,   | Frackville,                       | Schuylkill county. |
| Bright, William W.,   | 225 S. Tenth street,              | Philadelphia.      |
| Brinkman, George,     | Peely,                            | Luzerne county.    |
| Briscoe, John,        | Delta,                            | York county.       |
| Brittain, John,       | 245 E. Jefferson street,          | Butler.            |
| Brobeck, C. P.,       | Rochester,                        | Beaver county.     |
| Brobst, J. C.,        | Lititz,                           | Lancaster county.  |
| Brockley, Joseph,     | Hanover,                          | York county.       |
| Brodhead, Edgar A.,   | Kittanning,                       | Armstrong county.  |
| Brodhead, Wm. F.,     | Kittanning,                       | Armstrong county.  |
| Brodie, Robert C.,    | Twentieth and Callowhill streets, | Philadelphia.      |
| Brodie, William B.,   | Doylestown,                       | Bucks county.      |
| Bromfield, John H.,   | Smithfield,                       | Fayette county.    |
| Brooks, George V.,    | 602 S. Second street,             | Philadelphia.      |
| Brooks, Mitchell B.,  | 148 South street,                 | Philadelphia.      |
| Brooks, Raymond R.,   | Miles Grove,                      | Erie county.       |
| Brown, Alonzo L.,     | Belle Vernon,                     | Fayette county.    |
| Brown, Arthur G.,     | Wyalusing,                        | Bradford county.   |
| Brown, Charles W.,    | Belle Vernon,                     | Fayette county.    |
| Brown, Clark W.,      | Marchand,                         | Indiana county.    |
| Brown, Cyrus,         | 36 Broadway,                      | Milton.            |
| Brown, Edward H.,     | New Albany,                       | Bradford county.   |
| Brown, Eugene L.,     | Putneyville,                      | Armstrong county.  |
| Brown, Frank L.,      | 1544 Race street,                 | Philadelphia.      |
| Brown, Frederick,     | 441 Chestnut street,              | Philadelphia.      |
| Brown, F. Wigton,     | West Chester,                     | Chester county.    |
| Brown, George B. W.,  | 67 E. Main street,                | Titusville.        |
| Brown, George R.,     | Kittanning,                       | Armstrong county.  |
| Brown, George W.,     | 21 Park Row,                      | Erie.              |
| Brown, George W.,     | Port Carbon,                      | Schuylkill county. |

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| Brown, Harry T., . . .       | Sharpsville, . . . . .             | Mercer county.         |
| Brown, Homer, . . .          | 623 Liberty street, . . . . .      | Pittsburgh.            |
| Brown, James Allen, . . .    | 225 W. Duke street, . . . . .      | Lancaster.             |
| Brown, James L., . . .       | Pleasant Unity, . . . . .          | Westmoreland county.   |
| Brown, John R., . . .        | Port Carbon, . . . . .             | Schuylkill county.     |
| Brown, John S., . . .        | Stroudsburg, . . . . .             | Monroe county.         |
| Brown, Levi B., . . .        | Seventh and Arch streets, . . . .  | Philadelphia.          |
| Brown, Otis, . . . . .       | Russell, . . . . .                 | Warren county.         |
| Brown, Reed B., . . .        | Summerville, . . . . .             | Jefferson county.      |
| Brown, Samuel P., . . .      | Greensburg, . . . . .              | Westmoreland county.   |
| Brown, Samuel W., . . .      | Main and Cotton streets, . . . . . | Manayunk.              |
| Brown, Thomas D., . . .      | Twenty-seventh and Dauphin sts.,   | Philadelphia.          |
| Brown, William, . . .        | Greensburg, . . . . .              | Westmoreland county.   |
| Brown, William T. J., . . .  | Oxford, . . . . .                  | Chester county.        |
| Brownley, Charles J., . . .  | 4302 Lancaster avenue, . . . . .   | Philadelphia.          |
| Brubaker, A. M., . . .       | Goodville, . . . . .               | Lancaster county.      |
| Brubaker, David M., . . .    | Mifflinburg, . . . . .             | Union county.          |
| Brubaker, Edwin S., . . .    | 231 Main street, . . . . .         | Monongahela City.      |
| Bruckmann, Fred'k, . . .     | 76 East street, . . . . .          | Allegheny.             |
| Brugh, P. S., . . . .        | 156 Locust street, . . . . .       | Columbia.              |
| Brusster, H. B., . . .       | Birdsboro', . . . . .              | Berks county.          |
| Bruster, George C., . . .    | Sayre, . . . . .                   | Bradford county.       |
| Bryan, Henry N., . . .       | 123 N. Eleventh street, . . . . .  | Philadelphia.          |
| Bryson, Lewis, . . . .       | Ephrata, . . . . .                 | Lancaster county.      |
| Buchanan, A. Stein, . . .    | Chester, . . . . .                 | Delaware county.       |
| Buchheit, Charles R., . . .  | McDonald, . . . . .                | Washington county.     |
| Buchholz, Wm. M., . . .      | 541 E. Thompson street, . . . . .  | Philadelphia.          |
| Buck, Frank L., . . .        | Ashland, . . . . .                 | Schuylkill county.     |
| Buck, John A., . . .         | North Warren, . . . . .            | Warren county.         |
| Buck, Peter E., . . .        | Ashland, . . . . .                 | Schuylkill county.     |
| Buck, William G., . . .      | Shamokin, . . . . .                | Northumberland county. |
| Buckingham, Jas. H., . . .   | 1700 Mt. Vernon street, . . . . .  | Philadelphia.          |
| Buckley, L. Edward, . . .    | Ward, . . . . .                    | Delaware county.       |
| Buckman, James, . . .        | Eighth and Green streets, . . . .  | Philadelphia.          |
| Buckman, Thomas L., . . .    | Chestnut Hill, . . . . .           | Philadelphia.          |
| Buckwalter, Irwin M., . . .  | Phoenixville, . . . . .            | Chester county.        |
| Buehler, A. D., . . .        | Gettysburg, . . . . .              | Adams county.          |
| Buehler, L. M., . . .        | Gettysburg, . . . . .              | Adams county.          |
| Bullock, Charles, . . .      | 528 Arch street, . . . . .         | Philadelphia.          |
| Bullock, John G., . . .      | 528 Arch street, . . . . .         | Philadelphia.          |
| Bullock, Thomas H., . . .    | 3620 Locust street, . . . . .      | Philadelphia.          |
| Bullock, William A., . . .   | 528 Arch street, . . . . .         | Philadelphia.          |
| Bundel, Charles E., . . .    | Sharon, . . . . .                  | Mercer county.         |
| Bunker, William B., . . .    | 1631 Arch street, . . . . .        | Philadelphia.          |
| Burdick, Archibald W., . . . | 1228 Filbert street, . . . . .     | Philadelphia.          |
| Burdick, Edwin R., . . .     | 331 Ward street, . . . . .         | Philadelphia.          |
| Burg, John D., . . .         | Third and George streets, . . . .  | Philadelphia.          |
| Burk, Alfred G., . . .       | 2526 Montgomery avenue, . . . . .  | Philadelphia.          |
| Burk, William B., . . .      | Sixth and Arch streets, . . . . .  | Philadelphia.          |
| Burke, William T., . . .     | 1311 Columbia avenue, . . . . .    | Philadelphia.          |
| Burkett, George G., . . .    | Punxsutawney, . . . . .            | Jefferson county.      |
| Burkhart, Herman A., . . .   | 5 Broad street, . . . . .          | Bethlehem.             |
| Burland, Samuel C., . . .    | 825 W. Third street, . . . . .     | Chester.               |
| Burnham, Dewitt C., . . .    | Mansfield, . . . . .               | Tioga county.          |
| Burns, Andrew B., . . .      | Montrose, . . . . .                | Susquehanna county.    |
| Burns, George C., . . .      | Montrose, . . . . .                | Susquehanna county.    |
| Burns, Howard W., . . .      | Coraopolis, . . . . .              | Allegheny county.      |



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| Burns, John K., . . . .       | Minersville, . . . . .               | Schuylkill county.  |
| Burns, William A., . .        | 1130 Spring Garden street, . . . .   | Philadelphia.       |
| Burns, Willoughby P., . . . . | Minersville, . . . . .               | Schuylkill county.  |
| Burt, Andrew, . . . .         | Tamaqua, . . . . .                   | Schuylkill county.  |
| Burton, Robert J., . . .      | 1300 S. Fifth street, . . . . .      | Philadelphia.       |
| Bushey, Franklin A., . .      | Greencastle, . . . . .               | Franklin county.    |
| Buss, Milton M., . . .        | South Bethlehem, . . . . .           | Northampton county. |
| Bussler, Royal H., . . .      | Arch and Elm streets, . . . . .      | Williamsport.       |
| Bute, W. F., . . . .          | Vanderbilt, . . . . .                | Fayette county.     |
| Butler, John P., . . .        | 1914 Sixth avenue, . . . . .         | Altoona.            |
| Butt, Abijah W., . . .        | Paoli, . . . . .                     | Chester county.     |
| Butz, A. S., . . . .          | Thurlow, . . . . .                   | Delaware county.    |
| Buzard, Albert M., . .        | Ansonville, . . . . .                | Clearfield county.  |
| Buzzard, John, . . . .        | Bangor, . . . . .                    | Northampton county. |
| Byerly, Charles H., . .       | Island Row, . . . . .                | West Philadelphia.  |
| Byerly, Milton R., . . .      | 918 Ridge avenue, . . . . .          | Philadelphia.       |
| Byers, Huzinga C., . .        | Pottstown, . . . . .                 | Montgomery county.  |
| Byers, Robert Carr, . .       | Fourth and Main streets, . . . .     | Monongahela City.   |
| Byers, Robert E., . . .       | 516 Market street, . . . . .         | Pittsburgh.         |
| Byers, William C., . . .      | 421 Penn avenue, . . . . .           | Pittsburgh.         |
| Byrne, Edward L., . . .       | Chester, . . . . .                   | Delaware county.    |
|                               |                                      |                     |
| Cable, Albert, . . . .        | 203 N. Market street, . . . . .      | Pottsville.         |
| Cadmus, Robert E., . .        | 1118 Spring Garden street, . . . .   | Philadelphia.       |
| Cabill, Edmund H., . .        | 388 Fifth avenue, . . . . .          | Pittsburgh.         |
| Cain, Albert W., . . .        | Elizabethtown, . . . . .             | Lancaster county.   |
| Cain, W. B., . . . .          | South Burgettstown, . . . . .        | Washington county.  |
| Caldwell, Florence M., .      | 1419 Girard avenue, . . . . .        | Philadelphia.       |
| Caldwell, Joseph F., . .      | Manhattan and Rebecca streets, . .   | Allegheny.          |
| Caldwell, John L., . .        | Greenville, . . . . .                | Mercer county.      |
| Caldwell, Robert A., . .      | Tarentum, . . . . .                  | Allegheny county.   |
| Calhoun, Bruce L., . .        | Verona, . . . . .                    | Allegheny county.   |
| Calhoun, James J., . .        | McKeesport, . . . . .                | Allegheny county.   |
| Calhoun, John T., . . .       | Kendall Creek, . . . . .             | McKean county.      |
| Callar, William T., . .       | Smethport, . . . . .                 | McKean county.      |
| Callender, William B., .      | Bradford, . . . . .                  | McKean county.      |
| Calvert, John M., . . .       | Renfrew, . . . . .                   | Butler county.      |
| Cameron, Norris, . . .        | Penn Run, . . . . .                  | Indiana county.     |
| Camm, William, . . .          | 330 De Kalb street, . . . . .        | Norristown.         |
| Camp, Benjamin E., . .        | Fourth and Main streets, . . . .     | Monongahela City.   |
| Camp, Frederick P., . .       | Port Allegany, . . . . .             | McKean county.      |
| Camp, Richard H., . . .       | Port Allegany, . . . . .             | McKean county.      |
| Campbell, Curt G., . .        | 264 Main street, . . . . .           | Johnstown.          |
| Campbell, Henry B., . .       | 2140 Callowhill street, . . . . .    | Philadelphia.       |
| Campbell, Howard E., . .      | New Wilmington, . . . . .            | Lawrence county.    |
| Campbell, Hugh, . . .         | Osceola Mills, . . . . .             | Clearfield county.  |
| Campbell, Jas. T. B., . .     | New Castle, . . . . .                | Lawrence county.    |
| Campbell, R. A., . . .        | Forty-first st. and Powelton ave., . | Philadelphia.       |
| Campbell, Solomon A., .       | Elkland, . . . . .                   | Tioga county.       |
| Campbell, Harry M., . .       | 804 Dickinson street, . . . . .      | Philadelphia.       |
| Campbell, L. B., . . .        | Luzerne, . . . . .                   | Luzerne county.     |
| Campbell, Milton, . . .       | Twenty-first and Pine streets, . . . | Philadelphia.       |
| Canfield, Marshall B., .      | Union City, . . . . .                | Erie county.        |
| Canfield, Porter B., . .      | Corydon, . . . . .                   | Warren county.      |
| Cannon, Benjamin J., .        | Moscow, . . . . .                    | Lackawanna county.  |
| Canton, Herman C., . .        | 818 Holland street, . . . . .        | Erie.               |
| Cantrell, William A., .       | Nineteenth and Moore streets, . .    | Philadelphia.       |

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| Cantrell, James H.,    | 1000 S. Second street,           | Philadelphia.      |
| Cappell, Theodore,     | Home street,                     | Pittsburgh.        |
| Carberry, P. J. L.,    | 1618 Pine street,                | Philadelphia.      |
| Carey, Thomas H.,      | Carversville,                    | Bucks county.      |
| Carey, Winfield S.,    | Phoenixville,                    | Chester county.    |
| Carl, Charles B.,      | Greencastle,                     | Franklin county.   |
| Carmack, George W.,    | Phoenixville,                    | Chester county.    |
| Carman, George L.,     | 2201 Hunting Park avenue,        | Philadelphia.      |
| Carothers, Horace H.,  | Hickory,                         | Washington county. |
| Carothers, John W.,    | Mill Hall,                       | Potter county.     |
| Carothers, Robert T.,  | McKeesport,                      | Allegheny county.  |
| Carothers, Samuel E.,  | McKeesport,                      | Allegheny county.  |
| Carpenter, William A., | 839 N. Twentieth street,         | Philadelphia.      |
| Carr, John D.,         | Foxburg,                         | Clarion county.    |
| Carroll, S. L.,        | Fourth st. and Susquehanna ave., | Philadelphia.      |
| Carslake, M. A.,       | 526 S. Twenty-second street,     | Philadelphia.      |
| Carslake, William H.,  | 526 S. Twenty-second street,     | Philadelphia.      |
| Carson, Jason W.,      | Du Bois,                         | Clearfield county. |
| Cartener, J. Gustav,   | 80 Washington avenue,            | Pittsburgh.        |
| Carter, John P.,       | Weatherly,                       | Carbon county.     |
| Cartwright, Chas. F.,  | 653 Andres street,               | Philadelphia.      |
| Carver, Conrad G.,     | 302 State street,                | Sharon.            |
| Case, John W.,         | Haristown,                       | Crawford county.   |
| Cashman, Elmer U.,     | York Springs,                    | Adams county.      |
| Caskey, J. R.,         | New Galilee,                     | Beaver county.     |
| Cassell, William E.,   | 1645 N. Sixth street,            | Harrisburg.        |
| Castle, Abraham L.,    | Upland,                          | Delaware county.   |
| Castner, Lewis C.,     | 6109 Penn avenue,                | Pittsburgh.        |
| Castner, L. H.,        | 6109 Penn avenue,                | Pittsburgh.        |
| Cathcart, Andrew B.,   | Bloomsburg,                      | Columbia county.   |
| Caulkins, Darius C.,   | Middleboro',                     | Erie county.       |
| Chaffee, Francis,      | Forks ville,                     | Sullivan county.   |
| Chaffee, Newton H.,    | Twenty-second and South streets, | Philadelphia.      |
| Chamberlain, John M.,  | Eighth st. and Montgomery ave.,  | Philadelphia.      |
| Chambers, Brinton H.,  | Avondale,                        | Chester county.    |
| Chambers, George R.,   | Emlenton,                        | Venango county.    |
| Chambers, Oscar T.,    | Honesdale,                       | Wayne county.      |
| Chambers, Thomas S.,   | Unionville,                      | Chester county.    |
| Chambers, William B.,  | Emlenton,                        | Venango county.    |
| Chandler, William D.,  | Strasburg,                       | Lancaster county.  |
| Chandler, William A.,  | 1945 N. Eleventh street,         | Philadelphia.      |
| Chapman, Alva L.,      | Tarentum,                        | Allegheny county.  |
| Chapman, Emily J.,     | 1901 Montgomery avenue,          | Philadelphia.      |
| Chase, Orlando L.,     | Coudersport,                     | Potter county.     |
| Cherry, James B.,      | 23 Fourth avenue,                | Pittsburgh.        |
| Cherry, William M.,    | 164 Second avenue,               | Pittsburgh.        |
| Chesney, Hance C.,     | Custer,                          | McKean county.     |
| Chesney, W. J.,        | Custer,                          | McKean county.     |
| Cheswright, James W.,  | 101 Wood street,                 | Pittsburgh.        |
| Childs, William R.,    | North Wales,                     | Montgomery county. |
| Chittenden, Chas. E.,  | 519 Lackawanna avenue,           | Scranton.          |
| Christ, Charles W.,    | Selinsgrove,                     | Snyder county.     |
| Christman, Chas. D.,   | Wiconisco,                       | Dauphin county.    |
| Christman, Harry W.,   | 1820 Columbia avenue,            | Philadelphia.      |
| Christy, Robert,       | Mansfield,                       | Allegheny county.  |
| Christy, Lydia S.,     | Mansfield,                       | Allegheny county.  |
| Church, Thomas C.,     | Jermyn,                          | Lackawanna county. |

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| Church, William F.,     | Kingston,                       | Luzerne county.        |
| Clabaugh, Alton,        | Eleventh avenue,                | Altoona.               |
| Clapham, Hesser C.,     | Cumberland and Emerald streets, | Philadelphia.          |
| Clark, Charles H.,      | Thirty-sixth and Race streets,  | Philadelphia.          |
| Clark, David C.,        | Sixteenth and Brown streets,    | Philadelphia.          |
| Clark, Harry S.,        | Uniontown,                      | Fayette county.        |
| Clark, J. Verner,       | West Middletown,                | Washington county.     |
| Clark, Joseph N.,       | 1111 North Third street,        | Harrisburg.            |
| Clark, Patrick,         | Jamestown,                      | Mercer county.         |
| Clark, Richard,         | Morrisville,                    | Bucks county.          |
| Clark, Robert K.,       | Cochranon,                      | Crawford county.       |
| Clarke, Emery E.,       | Bradford,                       | McKean county.         |
| Clarkson, Thomas R.,    | Shamokin,                       | Northumberland county. |
| Clay, Marcellus L.,     | Renovo,                         | Clinton county.        |
| Clayton, Araham T.,     | Shoemakertown,                  | Montgomery county.     |
| Cleaver, Lewis M.,      | East Bethlehem,                 | Washington county.     |
| Cleaver, Mrs. Mary M.,  | East Bethlehem,                 | Washington county.     |
| Clemens, John W.,       | Minersville,                    | Schuylkill county.     |
| Clemens, James L.,      | 24 S. Centre street,            | Pottsville.            |
| Clemson, Charles E.,    | 54 N. Fifth street,             | Reading.               |
| Clemson, Francis C.,    | Reading,                        | Berks county.          |
| Cleveland, Fred. L.,    | Erie,                           | Erie county.           |
| Clewell, William H.,    | 2323 Dean street,               | Philadelphia.          |
| Cliffe, Albert,         | Jefferson Hospital,             | Philadelphia.          |
| Cliffe, William L.,     | 2781 Kensington avenue,         | Philadelphia.          |
| Clinefelter, Plumer W., | Wilson avenue,                  | Oil City.              |
| Cloud, Harlan,          | Darby,                          | Delaware county.       |
| Clutton, Frank,         | Centreville,                    | Butler county.         |
| Clutton, George W.,     | Slippery Rock,                  | Butler county.         |
| Coble, Aaron C.,        | Dauphin,                        | Dauphin county.        |
| Cochran, H. B.,         | 9 N. Queen street,              | Lancaster county.      |
| Cochran, Thomas A.,     | Apollo,                         | Armstrong county.      |
| Codville, Harry L.,     | 2622 E. Dauphin street,         | Philadelphia.          |
| Coggins, Franklin,      | 1009 Wood street,               | Philadelphia.          |
| Cohen, Isaac,           | Ridley Park,                    | Delaware county.       |
| Colbert, Harry,         | 32 S. Seneca street,            | Oil City.              |
| Colbert, Robert,        | 32 S. Seneca street,            | Oil City.              |
| Colborn, I. Grant,      | Fairview,                       | Luzerne connty.        |
| Colborn, William T.,    | Ashley,                         | Luzerne county.        |
| Cole, Frank G.,         | Sayre,                          | Bradford county.       |
| Cole, Horatio M.,       | Pleasant Valley,                | Luzerne county.        |
| Coleman, Milton C.,     | Reynoldsville,                  | Jefferson county.      |
| Coleman, Addison A.,    | Canonsburg,                     | Washington county.     |
| Coleman, James H.,      | Canonsburg,                     | Washington county.     |
| Coles, M. S.,           | Stony Fork,                     | Tioga county.          |
| Collom, Samuel S.,      | Saegertown,                     | Crawford county.       |
| Colt, Henry A.,         | 119 Queen street,               | Northumberland county. |
| Coltman, Thomas C.,     | 1104 Chestnut street,           | Philadelphia.          |
| Colwes, Henry F.,       | 3704 Forbes street,             | Pittsburgh.            |
| Comfort, Charles L.,    | 17 N. Eleventh street,          | Philadelphia.          |
| Comings, Chas. S.,      | Schuylkill Haven,               | Schuylkill county.     |
| Comp, Harry G.,         | 269 N. Twelfth street,          | Philadelphia.          |
| Compton, B. Frank,      | Upland,                         | Delaware county.       |
| Comstock, Gates S.,     | Grover,                         | Bradford county.       |
| Conard, Thomas E.,      | 728 N. Seventh street,          | Philadelphia.          |
| Condick, William,       | Brockwayville,                  | Jefferson county.      |
| Conley, J. H.,          | Shamokin,                       | Northumberland county. |

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| Conley, Joseph X.,     | 915 Liberty street,              | Pittsburgh.            |
| Connely, S. S.,        | Pittsfield,                      | Warren county.         |
| Conner, George P.,     | 830 Chestnut street,             | Philadelphia.          |
| Conner, John B.,       | Burnside,                        | Clearfield county.     |
| Conner, Joseph S.,     | Beaver Falls,                    | Beaver county.         |
| Conner, Orlando,       | Lincolnton,                      | Crawford county.       |
| Conner, William,       | 4856 Germantown avenue,          | Philadelphia.          |
| Connerton, Francis A., | Mahanoy Plains,                  | Schuylkill county.     |
| Conrad, George E.,     | Johnstown,                       | Cambria county.        |
| Conrad, John P.,       | 84 S. Twelfth street,            | Pittsburgh.            |
| Conwell, Charles L.,   | 237 Wyoming avenue,              | Scranton.              |
| Conwell, Edward S.,    | Chester                          | Delaware county.       |
| Cook, Edward P.,       | West Middlesex,                  | Mercer county.         |
| Cook, Ellis G.,        | New Oxford,                      | Adams county.          |
| Cook, Francis W.,      | Royersford,                      | Montgomery county.     |
| Cook, James G.,        | New Alexandria,                  | Westmoreland county.   |
| Cook, John B.,         | Sixteenth and Lombard streets,   | Philadelphia.          |
| Cook, Oswald,          | 3356 Ridge avenue,               | Philadelphia.          |
| Cook, Stephen G.,      | 210 Main street,                 | Coatesville.           |
| Cooke, George,         | Oxford,                          | Chester county.        |
| Cooke, Milton R.,      | Mahoningtown,                    | Lawrence county.       |
| Cool, Romulus B.,      | 54 Kirkpatrick avenue.           | Allegheny.             |
| Cooley, Frank H.,      | Montrose,                        | Susquehanna county.    |
| Cooley, Harry C.,      | Manayunk,                        | Philadelphia.          |
| Coon, Oliver P.,       | Ceres,                           | McKean county.         |
| Cooper, Charles T.,    | Sewickley,                       | Allegheny county.      |
| Cope, Frank H.,        | 425 W. Dauphin street,           | Philadelphia.          |
| Cope, Thomas,          | Nazareth,                        | Northampton county.    |
| Copenhaver, John A.,   | 266 Federal street,              | Allegheny.             |
| Copland, James B.,     | 131 Broad street,                | Harrisburg.            |
| Corbett, Albert G.,    | Clarion,                         | Clarion county.        |
| Corbett, J. H.,        | Mansfield,                       | Allegheny county.      |
| Corbett, W. W.,        | New Bethlehem,                   | Clarion county.        |
| Corbyn, Theophilus N., | 1847 N. Ninth street,            | Philadelphia.          |
| Corey, Horace M.,      | Peale,                           | Clearfield county.     |
| Cornell, Edward A.,    | Fourth and Pine streets,         | Williamsport.          |
| Cornell, M. C.,        | Edinboro',                       | Erie county.           |
| Cornman, John A.,      | Beaver Falls,                    | Beaver county.         |
| Correll, Joseph B.,    | 2220 Diamond street,             | Philadelphia.          |
| Correy, John M.,       | Milton,                          | Northumberland county. |
| Corrie, Wm. M. G.,     | 4516 Lancaster avenue,           | Philadelphia.          |
| Corwin, J. H.,         | Montrose,                        | Susquehanna county.    |
| Cosgrove, William B.,  | New Derry,                       | Westmoreland county.   |
| Cottam, Charles M.,    | 24th street and Montgomery ave., | Philadelphia.          |
| Cotterel, John W.,     | 1704 N. Sixth street,            | Harrisburg.            |
| Cottrell, Clarence V., | 78 Main street,                  | Bradford.              |
| Coughenour, David R.,  | Stauffer,                        | Westmoreland county.   |
| Coughenour, Henry R.,  | Stauffer,                        | Westmoreland county.   |
| Coulter, N. S.,        | Sligo,                           | Clarion county.        |
| Coulter, P. L.,        | Cooperstown,                     | Venango county.        |
| Courson, Harry S.,     | 355 Pine street,                 | Williamsport.          |
| Covell, Carlton H.,    | Cochranon,                       | Crawford county.       |
| Cover, P. J.,          | Stoyestown,                      | Somerset county.       |
| Covert, A. W.,         | 4401 Butler street,              | Pittsburgh.            |
| Covert, J. Wells,      | Evans City,                      | Butler county.         |
| Cowell, Winfield S.,   | 6 Elm street,                    | Oil City.              |
| Cowen, William S.,     | 105 S. Centre street,            | Pottsville.            |



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| Cowles, Horace H., . . . | Lander, . . . . .                     | Warren county.      |
| Cowles, James P., . . .  | Orwell, . . . . .                     | Bradford county.    |
| Cox, Andrew P., . . .    | Big Run, . . . . .                    | Jefferson county.   |
| Cox, George W., . . .    | Tenth and Cumberland streets, . . .   | Philadelphia.       |
| Cox, Harry, . . . . .    | Sixty-fifth and Vine streets, . . .   | Philadelphia.       |
| Cox, James A., . . .     | 2455 N. Tenth street, . . . . .       | Philadelphia.       |
| Coxe, Hugh N., . . .     | Schuylkill Haven, . . . . .           | Schuylkill county.  |
| Cozens, Nathan A., . .   | 1801 N. Seventh street, . . . . .     | Philadelphia.       |
| Craig, Clark R., . . .   | 830 Chestnut street, . . . . .        | Philadelphia.       |
| Craig, James H., . . .   | 196 Beaver avenue, . . . . .          | Allegheny.          |
| Craig, James, . . . .    | 400 N. Third street, . . . . .        | Philadelphia.       |
| Craig, James S., . . .   | St. Petersburg, . . . . .             | Clarion county.     |
| Craig, John F., . . .    | Clintonville, . . . . .               | Venango county.     |
| Craig, Samuel A., . . .  | West Alexander, . . . . .             | Washington county.  |
| Craig, Stephen A., . .   | Freedom, . . . . .                    | Beaver county.      |
| Craighead, G. D., . . .  | 3029 Dakota street, . . . . .         | Philadelphia.       |
| Craighead, Thomas, . .   | 2602 Richmond street, . . . . .       | Philadelphia.       |
| Craine, W. Monroe C., .  | 1326 Sixth avenue, . . . . .          | Altoona.            |
| Crawford, Joseph, . . .  | 2822 Frankford avenue, . . . . .      | Philadelphia.       |
| Crawford, Luther, . . .  | Brownsville, . . . . .                | Fayette county.     |
| Crawford, Martyn P., .   | Millintown, . . . . .                 | Juniata county.     |
| Crawford, Samuel D., .   | 5 S. Third street, . . . . .          | Easton.             |
| Crawford, Walter, . . .  | Nazareth, . . . . .                   | Northampton county. |
| Crawford, Wilburn F., .  | Newberry, . . . . .                   | Lycoming county.    |
| Crawford, William H., .  | Nazareth, . . . . .                   | Northampton county. |
| Creighton, Benj. T., . . | Third street and Washington ave., . . | Philadelphia.       |
| Creighton, O. S., . . .  | Third street and Washington ave., . . | Philadelphia.       |
| Crenshaw, Edmund A., .   | 528 Arch street, . . . . .            | Philadelphia.       |
| Crenshaw, E. A., Jr., .  | 528 Arch street, . . . . .            | Philadelphia.       |
| Creswell, Robert, . . .  | West Millville, . . . . .             | Clarion county.     |
| Cribbs, John D., . . .   | Turtle Creek, . . . . .               | Allegheny.          |
| Cribbs, William M., . .  | Turtle Creek, . . . . .               | Allegheny.          |
| Crispens, John, . . . .  | 355 Fifth avenue, . . . . .           | Pittsburgh.         |
| Crissman, O. E., . . . . | 607 Eighth street, . . . . .          | Altoona.            |
| Crissman, S. S., . . . . | Philipsburg, . . . . .                | Centre county.      |
| Cronin John E., . . . .  | 157 Pennsylvania avenue, . . . . .    | Allegheny.          |
| Crooks, Elmo M., . . . . | 529 S. Thirteenth street, . . . . .   | Philadelphia.       |
| Crooks, Sarah J., . . .  | Thirteenth and South streets, . . .   | Philadelphia.       |
| Crooks, William C., . .  | Thirteenth and South streets, . . .   | Philadelphia.       |
| Cross, J. H., . . . . .  | Scrubgrass, . . . . .                 | Venango county.     |
| Crothers, James L., . .  | 2001 Fairmount avenue, . . . . .      | Philadelphia.       |
| Crotzer, Frank P., . . . | Nanticoke, . . . . .                  | Luzerne county.     |
| Crotzer, Robert K., . .  | Plymouth, . . . . .                   | Luzerne county.     |
| Crouch, Wallace H., . .  | Worthington, . . . . .                | Armstrong county.   |
| Crouse, George J., . . . | Logania, . . . . .                    | Perry county.       |
| Crowell, Charles M., . . | 166 W. Gay street, . . . . .          | West Chester.       |
| Crowthers, Thos. A., . . | Coal Centre, . . . . .                | Washington county.  |
| Cruice, Peter L., . . .  | 2727 E. Somerset street, . . . . .    | Philadelphia.       |
| Crutcher, William, . . . | 1600 Chestnut street, . . . . .       | Philadelphia.       |
| Cubbison, J. G., . . . . | New Castle, . . . . .                 | Lawrence county.    |
| Culbert, Joseph W., . .  | Collegeville, . . . . .               | Montgomery county.  |
| Culin, Mrs. Melissa, . . | 4128 Market street, . . . . .         | Philadelphia.       |
| Cummings, Joseph J., .   | Third and Pine streets, . . . . .     | Philadelphia.       |
| Cummings, T. F., . . .   | 107 Pittsburg street, . . . . .       | Scottdale.          |
| Cunningham, A. A., . .   | Volant, . . . . .                     | Lawrence county.    |
| Cunningham, John M., .   | 447 High street, . . . . .            | Pottstown.          |

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| Cunningham, T. S. N.,       | Clarksville, . . . . .             | Greene county.     |
| Curry, John L., . . . .     | 2140 Callowhill street, . . . . .  | Philadelphia.      |
| Curry, William H., . . .    | Gastonsville, . . . . .            | Washington county. |
| Curtin, Daniel J., . . . .  | 1545 S. Front street, . . . . .    | Philadelphia.      |
| Curtis, Frank A., . . . .   | Cochranon, . . . . .               | Crawford county.   |
| Curtis, L. C., . . . . .    | Utica, . . . . .                   | Venango county.    |
| Cuthbert, Richard W., . .   | 4000 Chestnut street, . . . . .    | Philadelphia.      |
| Dack, James, . . . . .      | Pleasantville, . . . . .           | Venango county.    |
| Dale, James A., . . . . .   | 19 S. George street, . . . . .     | York.              |
| Dale, W. H., . . . . .      | Brisbin, . . . . .                 | Clearfield county. |
| Daley, Lawrence F., . . .   | DuBois, . . . . .                  | Clearfield county. |
| Dalius, George E., . . . .  | Forty-ninth st. and Woodland av.,  | Philadelphia.      |
| Dallett, Prosper W., . . .  | 19 S. George street, . . . . .     | York.              |
| Dalpe, Frederick A., . . .  | 831 Corinthian avenue, . . . . .   | Philadelphia.      |
| Dalton, D. Alfred, . . . .  | Upland, . . . . .                  | Delaware county.   |
| Dalton David, . . . . .     | Sixth street and Upland avenue.    | Upland.            |
| Dalton, Joseph E., . . . .  | 313 Diamond street, . . . . .      | Philadelphia.      |
| Dambrun, Gustave, . . . .   | Shiloh and Virginia streets, . . . | Pittsburgh.        |
| Danowsky, Edward J., . . .  | 709 Hamilton street, . . . . .     | Allentown.         |
| Dare, George S., . . . . .  | 430 Adams avenue, . . . . .        | Scranton.          |
| Dare, Charles W., . . . .   | Troy, . . . . .                    | Bradford county.   |
| Darling, Lewis H., . . . .  | Sugar Grove, . . . . .             | Warren county.     |
| Darlington, Horace H., . .  | Concordville, . . . . .            | Delaware county.   |
| Daugherty, John M., . . .   | Indiana, . . . . .                 | Indiana county.    |
| Daugherty, S. Clark, . . .  | Indiana, . . . . .                 | Indiana county.    |
| Davenport, Elbridge F., . . | Albion, . . . . .                  | Erie county.       |
| Davies William O., . . . .  | Slatington, . . . . .              | Lehigh county.     |
| Davis, Alfred, . . . . .    | Taylorville, . . . . .             | Lackawanna county. |
| Davis, Charles E., . . . .  | 4559 Germantown avenue, . . . .    | Philadelphia.      |
| Davis, Charles W., . . . .  | 77 Ohio street, . . . . .          | Allegheny.         |
| Davis, David, Jr., . . . .  | 634 Preble avenue, . . . . .       | Allegheny.         |
| Davis, David R., . . . . .  | Lansford, . . . . .                | Carbon county.     |
| Davis, Dexter C., . . . . . | Oakdale, . . . . .                 | Allegheny county.  |
| Davis, Frank C., . . . . .  | 1538 Vine street, . . . . .        | Philadelphia.      |
| Davis, Fred H., . . . . .   | 2902 Richmond street, . . . . .    | Philadelphia.      |
| Davis, George H., . . . . . | 1050 Germantown avenue, . . . .    | Philadelphia.      |
| Davis, George W., . . . . . | Centralia, . . . . .               | Columbia county.   |
| Davis, Harry I., . . . . .  | Holidaysburg, . . . . .            | Blair county.      |
| Davis, Harvey A., . . . .   | Sheakleyville, . . . . .           | Mercer county.     |
| Davis, Henry B., . . . . .  | St. Clair, . . . . .               | Schuylkill county. |
| Davis, Isaac, . . . . .     | 630 Belgrade street, . . . . .     | Philadelphia.      |
| Davis, Jonathan W., . . . . | Plymouth, . . . . .                | Luzerne county.    |
| Davis, Joseph, . . . . .    | Taylorville, . . . . .             | Lackawanna county. |
| Davis, Kate I., . . . . .   | Frackville, . . . . .              | Schuylkill county. |
| Davis, Marshall A., . . . . | Eighth and Diamond streets, . .    | Philadelphia.      |
| Davis, Sallie S., . . . . . | St. Clair, . . . . .               | Schuylkill county. |
| Davis, Samuel B., . . . . . | Sixteenth and Vine streets, . . .  | Philadelphia.      |
| Davis, Sumner D., . . . . . | Jermyn, . . . . .                  | Lackawanna county  |
| Davis, Thomas B., . . . . . | Williamstown, . . . . .            | Dauphin county.    |
| Davis, Thomas E., . . . . . | Summit Hill, . . . . .             | Carbon county.     |
| Davis, William A., . . . .  | Frackville, . . . . .              | Schuylkill county. |
| Davis, William H., . . . .  | Coatesville, . . . . .             | Chester county.    |
| Davis, William H., . . . .  | 5111 Germantown avenue, . . . .    | Germantown.        |
| Davis, William W., . . . .  | 77 Ohio street, . . . . .          | Allegheny.         |
| Davison, Blythe J., . . . . | Canton, . . . . .                  | Bradford county.   |
| Davison, George S., . . . . | 900 Callowhill street, . . . . .   | Philadelphia.      |
| Davison, James E., . . . .  | 51 Anderson street, . . . . .      | Allegheny.         |

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| Davison, Thomas J.,    | Ebensburg,                      | Cambria county.      |
| Davy, George W.,       | Coatesville,                    | Chester county.      |
| Day, Dudley B.,        | Ridgway,                        | Elk county.          |
| Day, Samuel A.,        | Twelfth and Mt. Vernon streets, | Philadelphia.        |
| Day, William G.,       | 4122 Haverford avenue,          | Philadelphia.        |
| Dean, Charles W.,      | Sterrett's Gap,                 | Perry county.        |
| Dean, John M.,         | Parkesburg,                     | Chester county.      |
| Dean, Norman R.,       | 1901 Arch street,               | Philadelphia.        |
| De Benst, Robert H.,   | 614 S. Sixth street,            | Philadelphia.        |
| Deckard, John N.,      | Richfield,                      | Juniata county.      |
| Decker, E. J.,         | 167 Main avenue,                | Scranton.            |
| Decker, Frank M.,      | 223 S. Hyde Park avenue,        | Scranton.            |
| Decker, John W.,       | Mehoopany,                      | Wyoming county.      |
| Deens, John L.,        | Springdale,                     | Allegheny county.    |
| Deford, William H.,    | Frankfort Springs,              | Beaver county.       |
| De France, H. F.,      | Johnstown,                      | Cambria county.      |
| De Gour, Ambrose F.,   | 1928 Jefferson street,          | Philadelphia.        |
| Deibert, Thomas I.,    | 103 N. Centre street,           | Pottsville,          |
| Deibler, J. Harry,     | Millheim,                       | Centre county.       |
| Deiss, William,        | Fourth and Walnut streets,      | Harrisburg.          |
| De Kalb, H. L.,        | Bustleton,                      | Philadelphia county. |
| De Lester, F. R.,      | Sixty-fifth and Vine streets,   | Philadelphia.        |
| Delker, William,       | 1019 S. Second street,          | Philadelphia.        |
| De Long, William E.,   | Broad and Ellsworth streets,    | Philadelphia.        |
| De Marbaix, Thos. E.,  | 208 Girard avenue,              | Philadelphia.        |
| Demaree, Thomas E.,    | Newport,                        | Perry county.        |
| Demaree, William L.,   | Newport,                        | Perry county.        |
| Denison, Mary E.,      | 404 W. King street,             | Lancaster.           |
| Dennis, Frank E.,      | Carbondale,                     | Lackawanna county.   |
| Dennison, Burt,        | Bruin,                          | Butler county.       |
| Dennison, George E.,   | Downingtown,                    | Chester county.      |
| Denniston, Wm. M.,     | Hollidaysburg,                  | Blair county.        |
| Denny, John F.,        | Butler,                         | Butler county.       |
| De Normandie, H. W.,   | 59 S. Main street,              | Washington.          |
| Detrick, Samuel S.,    | East Stroudsburg,               | Monroe county.       |
| De Toland, Arthur,     | Fifteenth and Master streets,   | Philadelphia.        |
| Devine, George C.,     | 1319 S. Nineteenth street,      | Philadelphia.        |
| Devlin, William,       | New Castle,                     | Lawrence county.     |
| De Witt, Alpheus N.,   | Orangeville,                    | Columbia county.     |
| De Wolfe, Williard L., | Millerstown,                    | Butler county.       |
| Dice, William,         | 353 Beaver avenue,              | Allegheny.           |
| Dicks, James W.,       | New Oxford,                     | Adams county.        |
| Dickerson, Wm. E.,     | Media,                          | Delaware county.     |
| Dickinson, Robert C.,  | 711 State street,               | Erie.                |
| Dickson, James A.,     | Mt. Jackson,                    | Lawrence county.     |
| Dickson, Joseph H.,    | 819 Penn street,                | Pittsburgh.          |
| Dickson, W. S.,        | McConnellsburg,                 | Fulton county.       |
| Diefenbach, William,   | 1032 State street,              | Erie.                |
| Diefenbeck, Henry,     | Tulip and Wrecker streets,      | Philadelphia.        |
| Diehl, Benj. H.,       | 112 Diamond street,             | Philadelphia.        |
| Dilks, Levin S.,       | 541 Pine street,                | Philadelphia.        |
| Dilks, Louise M.,      | 541 Pine street,                | Philadelphia.        |
| Dille, John N.,        | Prosperity,                     | Washington county.   |
| Dinges, Jeremiah N.,   | Boalsburg,                      | Centre county.       |
| Dingman, Josephine,    | Hawley,                         | Wayne county.        |
| Dinsmore, Mrs. M. S.,  | Enon Valley,                    | Lawrence county.     |
| Dippery, George C.,    | Reedsville,                     | Mifflin county.      |

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| Dirham, John C., . . .    | North Clarendon, . . .              | Warren county.         |
| Dirmitt, Charles H., . .  | Nineteenth and Federal streets, .   | Philadelphia.          |
| Disque, Henry, . . .      | 170 Arch street, . . . . .          | Allegheny.             |
| Dittler, Frederick A., .  | 87 Chestnut street, . . . . .       | Allegheny.             |
| Diveley, Michael S., . .  | Elk Lick, . . . . .                 | Somerset county.       |
| Dix, Levin A., . . .      | 799 S. Second street, . . . . .     | Philadelphia.          |
| Dixon, Edgar K., . . .    | Blairsville, . . . . .              | Indiana county.        |
| Dobson, Leonard C., . .   | 2842 Ridge avenue, . . . . .        | Philadelphia.          |
| Dodd, William S., . . .   | Amity, . . . . .                    | Washington county.     |
| Dodds, Joseph M., . . .   | 23 Fourth avenue, . . . . .         | Pittsburgh.            |
| Dodge, Buel, . . . . .    | Honesdale, . . . . .                | Wayne county.          |
| Dodson, Charles G., . .   | 441 Chestnut street, . . . . .      | Philadelphia.          |
| Dodson, Robert C., . . .  | Emporium, . . . . .                 | Cameron county.        |
| Doerflinger, Theodore,    | 147 Wylie street, . . . . .         | Pittsburgh.            |
| Doll, John, . . . . .     | 1512 Peach street, . . . . .        | Erie.                  |
| Donaghue, James, . . .    | Girardville, . . . . .              | Schuylkill county.     |
| Donaghue, James A., . .   | Girardville, . . . . .              | Schuylkill county.     |
| Donaldson, H. A., . . .   | Bridgeville, . . . . .              | Allegheny county.      |
| Donaldson, Joseph B., .   | Canonsburg, . . . . .               | Washington county.     |
| Donly, Clarence J., . . . | Plains, . . . . .                   | Luzerne county.        |
| Donnell, George J., . .   | Downingtown, . . . . .              | Chester county.        |
| Donnelly William, . . .   | Austin, . . . . .                   | Potter county.         |
| Donough, William E., .    | 427 Green street, . . . . .         | Philadelphia.          |
| Doonan, Francis P., . .   | Dunbar, . . . . .                   | Fayette county.        |
| Doritty, Alexander, . .   | Verona, . . . . .                   | Allegheny county.      |
| Dorman, William A., . .   | Phoenixville, . . . . .             | Chester county.        |
| Dornisfe, Daniel H., . .  | Tunkhannock, . . . . .              | Wyoming county.        |
| Dorow, Albert O., . . .   | 201 Bedford avenue, . . . . .       | Pittsburgh.            |
| Dorsey, James A., . . .   | 81 Ledlie street, . . . . .         | Allegheny.             |
| Dosch, Benton G., . . .   | 187 Federal street, . . . . .       | Allegheny.             |
| Doty, Cleon L., . . .     | 1900 Judson Place, . . . . .        | Warren.                |
| Doumaux, Louis, . . .     | Wellsboro', . . . . .               | Tioga county.          |
| Dougherty, Jas. R., Jr.,  | Indiana, . . . . .                  | Indiana county.        |
| Dougherty, Jos. M., . .   | Layetteville, . . . . .             | Franklin county.       |
| Douglass, Serrill, . . .  | Bristol, . . . . .                  | Bucks county.          |
| Dow, John W., . . .       | Hope Church, . . . . .              | Allegheny county.      |
| Downe, William D., . .    | 123 W. Market street, . . . . .     | Scranton.              |
| Downes, Randolph H., .    | University of Pennsylvania, . . .   | Philadelphia.          |
| Downey, Thomas, . . .     | Corry, . . . . .                    | Erie county.           |
| Drake, Martin E., . . .   | Bradford, . . . . .                 | McKean county.         |
| Drake, Theodore, . . .    | 429 Arch street, . . . . .          | Philadelphia.          |
| Driggs, Charles M., . .   | White Haven, . . . . .              | Luzerne county.        |
| Drorbaugh, James E., .    | 146 Main street, . . . . .          | Lock Haven.            |
| Druit, Anna B., . . .     | Mount Oliver, . . . . .             | Allegheny county.      |
| Druit, Samuel H., . . .   | Mount Oliver, . . . . .             | Allegheny county.      |
| Drum, Charles M., . . .   | 105 Parrish street, . . . . .       | Wilkes-Barre.          |
| Drumheller, F. P., . . .  | Sunbury, . . . . .                  | Northumberland county. |
| Duble, Jesse B., . . .    | 1200 W. Fourth street, . . . . .    | Williamsport.          |
| Du Bois, S. C., Jr., . .  | 1712 Norris street, . . . . .       | Philadelphia.          |
| Dudley, Emory G., . . .   | Wind Ridge, . . . . .               | Greene county.         |
| Duff, James E., . . .     | New Castle, . . . . .               | Lawrence county.       |
| Duffield, Harrison, . .   | 2601 N. Sixth street, . . . . .     | Philadelphia.          |
| Dunaway, Alex. B., . . .  | Greensboro', . . . . .              | Greene county.         |
| Dundor, Milton J., . . .  | 400 Penn street, . . . . .          | Reading.               |
| Dunlap, Samuel R., . . .  | Sewickley, . . . . .                | Allegheny county.      |
| Dunlap, William W., . .   | Coultersville, . . . . .            | Butler county.         |
| Dunn, Clifford G., . . .  | 3207 N. Seventeenth street, . . . . | Philadelphia.          |



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| Dunn, John B., . . . . .         | 301 Main street, . . . . .                  | Watsonstown.        |
| Dunn, Leon S., . . . . .         | Smithfield, . . . . .                       | Fayette county.     |
| Durborow, C. M. C., . . . . .    | Rutledge, . . . . .                         | Delaware county.    |
| Durham, Albert R., . . . . .     | 16 S. Fifth street, . . . . .               | Reading.            |
| Durham, Wm. M., . . . . .        | St. Joe, . . . . .                          | Butler county.      |
| Dutton, Albert E., . . . . .     | Titusville, . . . . .                       | Crawford county.    |
| Earl, William, . . . . .         | Ridgway, . . . . .                          | Elk county.         |
| Earl, William H., . . . . .      | 1436 Market street, . . . . .               | Philadelphia.       |
| Eaton, Albert M., . . . . .      | 1107 N. Front street, . . . . .             | Philadelphia.       |
| Ebaugh, William C., . . . . .    | Thirty-eighth st. and Lancaster av. . . . . | Philadelphia.       |
| Eble, Charles, . . . . .         | 6009 Penn avenue. . . . .                   | Pittsburgh.         |
| Eberhard, John O., . . . . .     | 2461 N. Fifth street, . . . . .             | Philadelphia.       |
| Eberhardt, Wm. F., . . . . .     | 625 N. Second street, . . . . .             | Philadelphia.       |
| Eberly, Charles L., . . . . .    | 4779 Germantown avenue, . . . . .           | Germantown.         |
| Eberly, Frank H., . . . . .      | 2500 Oxford street, . . . . .               | Philadelphia.       |
| Eberly, J. Addison, . . . . .    | 2500 Oxford street, . . . . .               | Philadelphia.       |
| Eberman, Frank L., . . . . .     | Centreville, . . . . .                      | Crawford county.    |
| Eberman, John S., . . . . .      | California, . . . . .                       | Washington county.  |
| Ebert, Charles M., . . . . .     | 25 Market street, . . . . .                 | Mauch Chunk.        |
| Ebert, Sarah E., . . . . .       | 25 Market street, . . . . .                 | Mauch Chunk.        |
| Eby, B. M., . . . . .            | Newport, . . . . .                          | Perry county.       |
| Eby, Edwin S., . . . . .         | Newport, . . . . .                          | Perry county.       |
| Eckels, C. A., . . . . .         | 600 S. Broad street, . . . . .              | Philadelphia.       |
| Eckels, G. Morris, . . . . .     | Mechanicsburg, . . . . .                    | Cumberland county.  |
| Eckels, Howard S., . . . . .     | 600 S. Broad street, . . . . .              | Philadelphia.       |
| Eckels, Walter L., . . . . .     | Mechanicsburg, . . . . .                    | Cumberland county.  |
| Eckert, Abia B., . . . . .       | 23 W. King street, . . . . .                | Lancaster.          |
| Eckert, John W., . . . . .       | Freemansburg, . . . . .                     | Northampton county. |
| Eckles, Whit., . . . . .         | Wampun, . . . . .                           | Lawrence county.    |
| Eddy, George V., . . . . .       | 4128 Market street, . . . . .               | Philadelphia.       |
| Eddy, Henry C., . . . . .        | 423 S. Eighteenth street, . . . . .         | Philadelphia.       |
| Edenborg, Chas. W. S., . . . . . | 1323 Franklin street, . . . . .             | Philadelphia.       |
| Edgar, I. Warren, . . . . .      | Nanticoke, . . . . .                        | Luzerne county.     |
| Edie, John B., . . . . .         | McKeesport, . . . . .                       | Allegheny county.   |
| Edmondson, Wm. M., . . . . .     | Renovo, . . . . .                           | Clinton county.     |
| Edmunds, Cyrus, . . . . .        | Braddock, . . . . .                         | Allegheny county.   |
| Edwards, Charles M., . . . . .   | 2722 N. Eleventh street, . . . . .          | Philadelphia.       |
| Edwards, John W., . . . . .      | 169 Wylie avenue, . . . . .                 | Pittsburgh.         |
| Eggers, Edward E., . . . . .     | 172 Ohio street, . . . . .                  | Allegheny.          |
| Eggers, Frederick H., . . . . .  | 172 Ohio street, . . . . .                  | Allegheny.          |
| Eggers, Frederick W., . . . . .  | 299 Ohio street, . . . . .                  | Allegheny.          |
| Eggert, George I. G., . . . . .  | Parker's Landing, . . . . .                 | Armstrong county.   |
| Eichelberger, Eli, . . . . .     | Saxton, . . . . .                           | Bedford county.     |
| Eichelberger, John C., . . . . . | Saxton, . . . . .                           | Bedford county.     |
| Eichnor, George, . . . . .       | Meyersdale, . . . . .                       | Somerset county.    |
| Ficke, Marion N., . . . . .      | 1560 Dickson avenue, . . . . .              | Scranton.           |
| Eiler, Edward, . . . . .         | Meadville, . . . . .                        | Crawford county.    |
| Eiler, Valentine W., . . . . .   | Meadville, . . . . .                        | Crawford county.    |
| Einstein, Morris, . . . . .      | 164 East street, . . . . .                  | Allegheny.          |
| Eisenbeis, Gottlieb, . . . . .   | 113 Federal street, . . . . .               | Allegheny.          |
| Eisenbeis, William F., . . . . . | 61 Ohio street, . . . . .                   | Allegheny.          |
| Eisenhart, Foster B., . . . . .  | 2001 N. Seventeenth street, . . . . .       | Philadelphia.       |
| Eisenhuth, Jacob G., . . . . .   | Millheim, . . . . .                         | Centre county.      |
| Elden, Wm. McKee, . . . . .      | Bendersville, . . . . .                     | Adams county.       |
| Eldredge, Joseph J., . . . . .   | 1133 S. Broad street, . . . . .             | Philadelphia.       |
| Eldridge, Samuel B., . . . . .   | Brooklyn, . . . . .                         | Susquehanna county. |
| Elfreth, Caleb P., . . . . .     | 148 South street, . . . . .                 | Philadelphia.       |

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| Elfreth, Caleb P., Jr.,  | 148 South street,               | Philadelphia.          |
| Elfreth, Jacob R.,       | 1201 Columbia avenue,           | Philadelphia.          |
| Ellinger, Theophilus J., | 4513 Lancaster avenue,          | Philadelphia.          |
| Elliott, Henry W.,       | Lawrenceville,                  | Tioga county.          |
| Elliott, Charles V.,     | Mansfield,                      | Tioga county.          |
| Elliott, William D.,     | 1743 N. Fifteenth street,       | Philadelphia.          |
| Ellis, George W.,        | Minersville,                    | Schuylkill county.     |
| Ellis, Thomas J.,        | Providence,                     | Lackawanna county.     |
| Ellis, Wardle,           | Media,                          | Delaware county.       |
| Elmendorf, Edward M.,    | Eldred,                         | McKean county.         |
| Elrick, J. M.,           | Harrisville,                    | Butler county.         |
| Else, Charles H.,        | Milesburg,                      | Centre county.         |
| Ellwell, Albert L.,      | 1502 Richmond street,           | Philadelphia.          |
| Ely, Benjamin C.,        | Girard,                         | Erie county.           |
| Ely, Charles S.,         | Milton,                         | Northumberland county. |
| Ely, Harry B.,           | Ariel,                          | Wayne county.          |
| Ely, Richard H.,         | Laceyville,                     | Wyoming county.        |
| Ely, Samuel S.,          | 2018 Mervine street,            | Philadelphia.          |
| Ely, Theodore J.,        | Conneautville,                  | Crawford county.       |
| Emanuel, Louis,          | 177 Second avenue,              | Pittsburgh.            |
| Emerson, Henry E.,       | Milford,                        | Pike county.           |
| Emerson, Worthington,    | 528 Arch street,                | Philadelphia.          |
| Emlet, Jacob L.,         | Hanover,                        | York county.           |
| Emmons, Eugene W.,       | 408 Main street,                | Uniontown.             |
| Empfield, Frank T.,      | Greenville,                     | Indiana county.        |
| Emerick, Benj. F.,       | Newville,                       | Cumberland county.     |
| Emerick, E. M.,          | 221 Spruce street,              | Shamokin.              |
| Endicott, John F.,       | Andalusia,                      | Bucks county.          |
| England, Joseph W.,      | 800 S. Tenth street,            | Philadelphia.          |
| England, Robert,         | 800 S. Tenth street,            | Philadelphia.          |
| English, George H.,      | Chelten and Pulaski avenues,    | Philadelphia.          |
| Ensign, Harry C.,        | Waymart,                        | Wayne county.          |
| Ensminger, Samuel A.,    | Manheim,                        | Lancaster county.      |
| Ercanbrack, George T.,   | Athens,                         | Bradford county.       |
| Erney, Albert S.,        | 1800 Reed street,               | Philadelphia.          |
| Esenwein, Augustus,      | 108 S. Fifth street,            | Reading.               |
| Esenwein, John R.,       | Fourth and Norris streets,      | Philadelphia.          |
| Esler, James M.,         | Tarentum,                       | Allegheny county.      |
| Espey, William T.,       | 516 Market street,              | Pittsburgh.            |
| Essick, Howard M.,       | Picture Rocks,                  | Lycoming county.       |
| Estabrook, Wm. T.,       | Great Bend,                     | Susquehanna county.    |
| Esterwood Frank K.,      | Meadville,                      | Crawford county.       |
| Estlack, Horace W.,      | 1233 S. Seventeenth street,     | Philadelphia.          |
| Evans, Albert O.,        | Connellsville,                  | Fayette county.        |
| Evans, Alex. R.,         | 1106 Chestnut street,           | Philadelphia.          |
| Evans, Aneurin,          | Kingston,                       | Luzerne county.        |
| Evans, Charles B.,       | 144 Virginia avenue,            | Atlantic City, N. J.   |
| Evans, Edmund H.,        | 1901 S. Seventh street,         | Philadelphia.          |
| Evans, Edward,           | 126 River street,               | Scranton.              |
| Evans, George B.,        | 1106 Chestnut street,           | Philadelphia.          |
| Evans, George B.,        | 4334 Belair street,             | Manayunk.              |
| Evans, John E.,          | 1228 Market street,             | Philadelphia.          |
| Evans, John H.,          | 1969 Camac street,              | Philadelphia.          |
| Evans, Joseph S.,        | West Chester,                   | Chester county.        |
| Evans, Lewis B.,         | 22d street and Montgomery ave., | Philadelphia.          |
| Evans, Myron J.,         | Edwardsville,                   | Luzerne county.        |
| Evans, Thomas M.,        | 732 Plover street,              | Philadelphia.          |

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| Evans, William, . . .      | 2300 Amber street, . . . . .         | Philadelphia.      |
| Everett, Charles A., . .   | Lemont, . . . . .                    | Centre county.     |
| Eves, Ellis, . . . . .     | Millville, . . . . .                 | Columbia county.   |
| Eves, William W., . . .    | Millville, . . . . .                 | Columbia county.   |
| Ewing, George W., . . .    | 710 S. Second street, . . . . .      | Philadelphia.      |
| Ewing, Jackson S., . . .   | Snow Shoe, . . . . .                 | Centre county.     |
| Eyer, Harvey B., . . . .   | 1341 Ridge avenue, . . . . .         | Philadelphia.      |
| Eyler, Maurice E., . . .   | Waynesboro', . . . . .               | Franklin county.   |
| Eyster, Alfred E., . . .   | 903 N. Third street, . . . . .       | Harrisburg.        |
| Eyster, Joseph, . . . .    | 331 Market street, . . . . .         | Sunbury.           |
| Eyster, Samuel D., . . .   | 331 Market street, . . . . .         | Sunbury.           |
| Fackler, Lewis H., . . .   | East Berlin, . . . . .               | Adams county.      |
| Fager, Christian M., . . . | 1223 N. Sixth street, . . . . .      | Harrisburg.        |
| Fahey, Edward H., . . .    | Thirteenth and Race streets, . . .   | Philadelphia.      |
| Fajans, Julien, . . . .    | 1638 Diamond street, . . . . .       | Philadelphia.      |
| Falck, Milton S., . . . .  | 24 E. German street, . . . . .       | Lancaster.         |
| Faller, Alphonsus, . . .   | Fourth ave. and Smithfield street, . | Pittsburgh.        |
| Fallowre, Edwin R., . . .  | 2300 Amber street, . . . . .         | Philadelphia.      |
| Farley, Harvey N., . . .   | Equinunk, . . . . .                  | Wayne county.      |
| Farley, Joseph, . . . .    | 1713 S. Twelfth street, . . . . .    | Philadelphia.      |
| Farley, William H., . . .  | 222 E. Ninth street, . . . . .       | Chester.           |
| Farrell, Francis A., . . . | Plains, . . . . .                    | Luzerne county.    |
| Farrell, Frank E., . . .   | 17 Maple avenue, . . . . .           | Johnstown.         |
| Farrell, James E., . . .   | Starrucca, . . . . .                 | Wayne county.      |
| Farver, Rufus C., . . .    | New Lebanon, . . . . .               | Mercer county.     |
| Fasenmyer, F. P., . . .    | Clarion, . . . . .                   | Clarion county.    |
| Faulds, W. H., . . . .     | Luzerne, . . . . .                   | Luzerne county.    |
| Faulkner, Charles P., . .  | Venango, . . . . .                   | Crawford county.   |
| Faull, Glenn K., . . . .   | 706 Fifth avenue, . . . . .          | Pittsburgh,        |
| Faunce, William H., . . .  | 467 E. Girard avenue, . . . . .      | Philadelphia.      |
| Faust, John K., . . . .    | 801 Penn street, . . . . .           | Reading.           |
| Fawcett, John W., . . .    | McKeesport, . . . . .                | Allegheny county   |
| Feaeheller, Theo. D., . .  | 2124 N. Sixteenth street, . . . . .  | Philadelphia.      |
| Feather, Francis F., . . . | Sandy Lake, . . . . .                | Mercer county.     |
| Feather, H. C. L., . . .   | Sandy Lake, . . . . .                | Mercer county.     |
| Feather, John C., . . .    | Sandy Lake, . . . . .                | Mercer county.     |
| Fegley, Orlando, . . . .   | 544 N. Front street, . . . . .       | Allentown.         |
| Fegley, William L., . . .  | 544 N. Front street, . . . . .       | Allentown.         |
| Fehr, George W., . . . .   | 1201 Chestnut street, . . . . .      | Philadelphia.      |
| Feidt, George D., . . .    | 1422 Poplar street, . . . . .        | Philadelphia.      |
| Felix, Ellwood S., . . .   | Minersville, . . . . .               | Schuylkill county. |
| Fell, John A., . . . .     | Doylestown, . . . . .                | Bucks county.      |
| Ferguson, David S., . . .  | 2200 Franklin avenue, . . . . .      | Philadelphia.      |
| Ferguson, Frank U., . . .  | Gallitzin, . . . . .                 | Cambria county.    |
| Ferguson, Hugh, . . . .    | Darlington, . . . . .                | Beaver county.     |
| Ferguson, James O., . . .  | 124 W. Thompson street, . . . . .    | Philadelphia.      |
| Ferguson, John B., . . .   | Howard and Thompson streets, . . .   | Philadelphia.      |
| Fernsler, Edward S., . . . | 109 E. Arch street, . . . . .        | Pottsville.        |
| Fernsler, Edwin K., . . .  | Terra Hill, . . . . .                | Lancaster county.  |
| Fernsler, H. O'Neill, . .  | 109 E. Arch street, . . . . .        | Pottsville.        |
| Fetterolf, David N., . . . | University of Pennsylvania, . . . .  | Philadelphia.      |
| Fetters, Frank P., . . .   | Twenty-ninth and Poplar streets, . . | Philadelphia.      |
| Fetters, William A., . . . | Third and Brown streets, . . . . .   | Philadelphia.      |
| Fiedler, Albert R. H., . . | 3356 Ridge avenue, . . . . .         | Philadelphia.      |
| Field, James K., . . . .   | 2245 Bouvier street, . . . . .       | Philadelphia.      |
| Field, Wm. S. N., . . . .  | 411 S. Ninth street, . . . . .       | Philadelphia.      |
| Fielding, John F., . . .   | Chester, . . . . .                   | Delaware county.   |

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| Fienhold, Edward H.,     | Thirteenth and Morris streets, | Philadelphia.          |
| Fies, John H.,           | 1201 Filbert street,           | Philadelphia.          |
| Fike, Giles A.,          | Dundaff,                       | Susquehanna county.    |
| Finck, Anthony R.,       | 208 Girard avenue,             | Philadelphia.          |
| Finck, Edward V.,        | 208 Girard avenue,             | Philadelphia.          |
| Findley, J. A.,          | Indiana,                       | Indiana county.        |
| Fink, Allen,             | Hamburg,                       | Berks county.          |
| Fink, George W. M.,      | Irwin,                         | Westmoreland county.   |
| Finkelpearl, Henry,      | 213 Locust street,             | Philadelphia.          |
| Finley, Lesden B.,       | Rochester,                     | Beaver county.         |
| Finley, Norval H.,       | New Brighton,                  | Beaver county.         |
| Finnerty, Edward J.,     | Centralia,                     | Columbia county.       |
| Finney, William E.,      | 28 W. Market street,           | Chambersburg.          |
| Fischer, John,           | 610 W. Sixth street,           | Erie.                  |
| Fischer, William,        | 3 N. Park Row,                 | Erie.                  |
| Fishel, Henry W.,        | Dillsburg,                     | York county.           |
| Fisher, Charles G.,      | Roulette,                      | Potter county.         |
| Fisher, Edwin,           | 827 Green street,              | Reading.               |
| Fisher, Franklin,        | Macungie,                      | Lehigh county.         |
| Fisher, George W.,       | Catawissa,                     | Columbia county.       |
| Fisher, K. Ludwick,      | Glen Lyon,                     | Luzerne county.        |
| Fiske, William C.,       | 1411 Arch street,              | Philadelphia.          |
| Fister, Thomas W.,       | Hamburg,                       | Berks county.          |
| Fitch, A. B.,            | Factoryville,                  | Wyoming county.        |
| Fitch, George D.,        | 3929 Lancaster avenue,         | Philadelphia.          |
| Fitch, Pelatiah,         | 1739 Vine street,              | Philadelphia.          |
| Fitzgerald, Maurice,     | Conneautville,                 | Crawford county.       |
| Fitzpatrick, Philip T.,  | 1109 Race street,              | Philadelphia.          |
| Flecher, Bernard,        | Fryburg,                       | Clarion county.        |
| Fleck, Frank R.,         | 171 Beaver avenue,             | Allegheny.             |
| Fleming, Daniel W.,      | 437 N. Eighth street,          | Philadelphia.          |
| Fleming, Frank B.,       | 7 W. Main street,              | Shippensburg.          |
| Fleming, George S.,      | 42 Market street,              | Pittsburgh.            |
| Fleming, Harvey B.,      | Fayette City,                  | Fayette county.        |
| Fleming, John A.,        | 7 W. Main street,              | Shippensburg.          |
| Fleming, John W.,        | Meyran street,                 | Pittsburgh.            |
| Fleming, Joseph E.,      | Pittston,                      | Luzerne county.        |
| Fleming, Walter,         | Tower City,                    | Schuylkill county.     |
| Fletcher, Benj. K.,      | 1623 Christian street,         | Philadelphia.          |
| Fletcher, E. B.,         | 424 W. Eighteenth street,      | Erie.                  |
| Flexer, Lewis A.,        | Tamanend,                      | Schuylkill county.     |
| Fohmann, Frederick,      | 845 N. Sixth street,           | Philadelphia.          |
| Follmer, Daniel,         | 500 N. Sixth street,           | Philadelphia.          |
| Follmer, B. S.,          | Milton,                        | Northumberland county. |
| Foltz, John B.,          | 1839 N. Sixth street,          | Harrisburg.            |
| Fones, James H. D.,      | Tionesta,                      | Forest county.         |
| Foote, James A.,         | Petrolia,                      | Butler county.         |
| Foote, Mrs. Margaret A., | Archbald,                      | Lackawanna county.     |
| Forgy, James,            | McVeytown,                     | Mifflin county.        |
| Forgy, Joseph J.,        | McVeytown,                     | Mifflin county.        |
| Forney, Charles M.,      | 426 Market street,             | Harrisburg.            |
| Forrest, Albert D.,      | 3922 Germantown avenue,        | Philadelphia.          |
| Forrest, William J.,     | 171 Beaver avenue,             | Allegheny.             |
| Forsythe, G. W.,         | Natrona,                       | Allegheny county.      |
| Forthman, Ferdinand,     | Waynesboro',                   | Franklin county.       |
| Foster, Frank R.,        | Smethport,                     | McKean county.         |
| Foster, George A.,       | McKeesport,                    | Allegheny county.      |



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| Foster, George E., . . .    | 394 Washington avenue, . . . . .   | Allegheny.           |
| Foster, Whildin, . . . .    | 835 Market street, . . . . .       | Philadelphia.        |
| Foster, William C., . . .   | Petrolia, . . . . .                | Butler county.       |
| Foulke, Samuel L., . . .    | 347 Adams avenue, . . . . .        | Scranton.            |
| Fowler, Chauncey, . . .     | Carbondale, . . . . .              | Lackawanna county.   |
| Fowler, Chauncey, Jr., .    | Carbondale, . . . . .              | Lackawanna county.   |
| Fowler, M. N., . . . .      | Foxburg, . . . . .                 | Clarion county.      |
| Fox, Francis, . . . . .     | Front and Brown streets, . . . .   | Philadelphia.        |
| Fox, Jesse W., . . . .      | Stoners, . . . . .                 | Westmoreland county. |
| Fox, Peter P., . . . .      | 73d street and Woodland ave., . .  | Philadelphia.        |
| Frailley, William O., . .   | 250 E. King street, . . . . .      | Lancaster.           |
| Franciscus, Wm. C., . . .   | Lock Haven, . . . . .              | Clinton county.      |
| Franck, Charles C., . . .   | 1122 Brown street, . . . . .       | Philadelphia.        |
| Francke, Theo. H., . . .    | 223 Wyoming avenue, . . . . .      | Scranton.            |
| Frank, John A., . . . .     | 45 S. Main street, . . . . .       | Butler.              |
| Frank, L. B., . . . . .     | Rebersburg, . . . . .              | Centre county.       |
| Frank, Theodore J., . . .   | 24 Darrah street, . . . . .        | Allegheny.           |
| Frank, Theron N., . . .     | Carlisle, . . . . .                | Cumberland county.   |
| Franks, Michael S., . . .   | Fairchance, . . . . .              | Fayette county.      |
| Frantz, D. J., . . . .      | Coal Centre, . . . . .             | Washington county.   |
| Frantz, George B., . . .    | Coal Centre, . . . . .             | Washington county.   |
| Frantz, William W., . . .   | Confluence, . . . . .              | Somerset county.     |
| Frazier, James F., . . .    | Meadville, . . . . .               | Crawford county.     |
| Freas, Sylvester K., . . .  | 2008 N. Seventeenth street, . . .  | Philadelphia.        |
| Freas, William K., . . .    | 1921 Uber street, . . . . .        | Philadelphia.        |
| Fredericks, John H., . .    | 3952 Lancaster avenue, . . . . .   | Philadelphia.        |
| Freeburg, Otto F., . . .    | 4727 Liberty avenue, . . . . .     | Pittsburgh.          |
| Freeman, Chester C., . .    | Plymouth, . . . . .                | Luzerne county.      |
| Freeman, George W., . . .   | 3321 N. Broad street, . . . . .    | Philadelphia.        |
| French, Adelbert P., . . .  | Susquehanna, . . . . .             | Susquehanna county.  |
| French, Charles S., . . .   | Coudersport, . . . . .             | Potter county.       |
| French, Frank B., . . . .   | 117 Main street, . . . . .         | Bradford.            |
| Freshell, George, . . . .   | 3522 Haverford avenue, . . . . .   | Philadelphia.        |
| Freseman, William L., . .   | 2801 Penn avenue, . . . . .        | Pittsburgh.          |
| Fretz, Abraham N., . . .    | Fleetwood, . . . . .               | Berks county.        |
| Fretz, C. D., . . . . .     | Sellersville, . . . . .            | Bucks county.        |
| Fretz, Mahlon B., . . . .   | Chalfont, . . . . .                | Bucks county.        |
| Fretz, Milton B., . . . .   | Palmyra, . . . . .                 | Lebanon county.      |
| Fretz, Oliver H., . . . .   | Quakertown, . . . . .              | Bucks county.        |
| Frey, Andrew G., . . . .    | 116 N. Queen street, . . . . .     | Lancaster.           |
| Frey, John P., . . . . .    | 1501 S. Sixteenth street, . . . .  | Philadelphia.        |
| Frey, John W., . . . . .    | 1850 N. Eighteenth street, . . . . | Philadelphia.        |
| Frew, George B., . . . .    | Paradise, . . . . .                | Lancaster county.    |
| Fries, Charles J. V., . . . | 1146 S. Fifth street, . . . . .    | Philadelphia.        |
| Fritzinger, Richard J., . . | 935 Arch street, . . . . .         | Philadelphia.        |
| Fronefield, Jos. M., Jr., . | General Wayne, . . . . .           | Delaware county.     |
| Frontz, Edward E., . . .    | 753 E. Third street, . . . . .     | Williamsport.        |
| Frost, Herman, . . . . .    | 2129 Carson street, . . . . .      | Pittsburgh.          |
| Frowert, Charles G., . . .  | Twelfth and Vine streets, . . . .  | Philadelphia.        |
| Fruh, Carl D. S., . . . .   | 2445 Ridge avenue, . . . . .       | Philadelphia.        |
| Fruh, Ernest, . . . . .     | 935 N. Broad street, . . . . .     | Philadelphia.        |
| Fruh, Ernst, . . . . .      | 1645 N. Broad street, . . . . .    | Philadelphia.        |
| Fruh, Gustav A., . . . .    | 1645 N. Broad street, . . . . .    | Philadelphia.        |
| Fruh, John, . . . . .       | 1645 N. Broad street, . . . . .    | Philadelphia.        |
| Fruh, Mary E. S., . . . .   | 1645 N. Broad street, . . . . .    | Philadelphia.        |
| Fry, Clinton M., . . . .    | 1208 Brown street, . . . . .       | Philadelphia.        |
| Fry, Franklin L., . . . .   | Manor Station, . . . . .           | Westmoreland county. |

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| Fry, Hiram P., . . . .          | Lititz, . . . . .                            | Lancaster county.      |
| Fry, Wilbur W., . . . .         | 145 E. Market street, . . . . .              | Wilkes-Barre.          |
| Fuller, Smith, Jr., . . . .     | Uniontown, . . . . .                         | Fayette county.        |
| Fulmer, George W., . . . .      | Tremont, . . . . .                           | Schuylkill county.     |
| Fulton, Joseph M., . . . .      | New London, . . . . .                        | Chester county.        |
| Funk, Lawson C., . . . .        | 499 Lancaster avenue, . . . . .              | Philadelphia.          |
| Furling, Mrs. Ethel A., . . . . | Roscoe, . . . . .                            | Washington county.     |
| Furling, William A., . . . .    | Roscoe, . . . . .                            | Washington county.     |
| Furman, Frank R., . . . .       | Hazleton, . . . . .                          | Luzerne county.        |
| Fye, Adam C., . . . .           | Tyrone, . . . . .                            | Blair county.          |
|                                 |                                              |                        |
| Gable, Ralph B., . . . .        | 119 Market street, . . . . .                 | Harrisburg.            |
| Gable, Samuel M., . . . .       | York, . . . . .                              | York county.           |
| Gabriel, Cassius H., . . . .    | Spartansburg, . . . . .                      | Crawford county.       |
| Gadd, Samuel W., . . . .        | 1158 S. Eighth street, . . . . .             | Philadelphia.          |
| Gaillard, Edward, . . . .       | 1800 N. Eleventh street, . . . . .           | Philadelphia.          |
| Galbraith, Robert H., . . . .   | Canonsburg, . . . . .                        | Washington county.     |
| Galbraith Wm. H., . . . .       | Folsom, . . . . .                            | Delaware county.       |
| Gallagher, James F., . . . .    | 546 N. Front street, . . . . .               | Allentown.             |
| Gallagher, James T., . . . .    | 830 Chestnut street, . . . . .               | Philadelphia.          |
| Gallaschick, Paul H., . . . .   | Thirty-third and Chestnut streets, . . . . . | Philadelphia.          |
| Galliger, Wm. M., . . . .       | 145 Adams avenue, . . . . .                  | Scranton.              |
| Gamble, David, . . . .          | Jamestown, . . . . .                         | Mercer county.         |
| Gamble, Frank M., . . . .       | Jamestown, . . . . .                         | Mercer county.         |
| Gamble, Jesse R., . . . .       | Jamestown, . . . . .                         | Mercer county.         |
| Gamble, John M., . . . .        | Shireoaks, . . . . .                         | Washington county.     |
| Gans, Wm. H., Jr., . . . .      | 1106 Chestnut street, . . . . .              | Philadelphia.          |
| Ganster, Wm. F., . . . .        | 146 S. Eleventh street, . . . . .            | Reading.               |
| Gant, Joseph S., . . . .        | Buena Vista, . . . . .                       | Allegheny county.      |
| Gantz, John A., . . . .         | Lebanon, . . . . .                           | Lebanon county.        |
| Garber, Thomas P., . . . .      | Greenville, . . . . .                        | Mercer county.         |
| Gardner, Charles H., . . . .    | 1410 Chestnut street, . . . . .              | Philadelphia.          |
| Gardner, Francis E., . . . .    | 1130 Spring Garden street, . . . . .         | Philadelphia.          |
| Gardner, John H., . . . .       | Stoyestown, . . . . .                        | Somerset county.       |
| Garland, John K., . . . .       | 1560 Dickson avenue, . . . . .               | Scranton.              |
| Garman, Jonas H., . . . .       | Lykens, . . . . .                            | Dauphin county.        |
| Garman, J. S., . . . .          | Berlin, . . . . .                            | Somerset county.       |
| Garner, George H., . . . .      | Tyrone, . . . . .                            | Blair county.          |
| Garrison, Jose, Jr., . . . .    | Fourth and Pine streets, . . . . .           | Williamsport.          |
| Garrow, Harry, . . . .          | Sunbury, . . . . .                           | Northumberland county. |
| Gasaway, John R., . . . .       | 208 North avenue, . . . . .                  | Allegheny.             |
| Gatchel, Edmund R., . . . .     | 1000 Spring Garden street, . . . . .         | Philadelphia.          |
| Geary, Frank M., . . . .        | 3028 Richmond street, . . . . .              | Philadelphia.          |
| Geiger, Jacob F. D., . . . .    | Boyetown, . . . . .                          | Berks county.          |
| Geilfuss, Alfred V., . . . .    | Thirteenth and Wood streets, . . . . .       | Philadelphia.          |
| Geissenhainer, H. E., . . . .   | 89 Logan street, . . . . .                   | Pittsburgh.            |
| Gelbert, Daniel G., . . . .     | 402 S. Washington avenue, . . . . .          | Scranton.              |
| Genois, Louis, . . . .          | 1201 Chestnut street, . . . . .              | Philadelphia.          |
| Gentry, John M., . . . .        | Stony Fork, . . . . .                        | Tioga county.          |
| George, Charles T., . . . .     | 1306 N. Third street, . . . . .              | Harrisburg.            |
| George, James M., . . . .       | Philipsburg, . . . . .                       | Centre county.         |
| George, M. E., . . . .          | Philipsburg, . . . . .                       | Centre county.         |
| George, Theodore, . . . .       | 1306 N. Third street, . . . . .              | Harrisburg.            |
| Gerhard, Alfred Y., . . . .     | 2260 N. Seventh street, . . . . .            | Philadelphia.          |
| Gerhard, Augustus F., . . . .   | Sixth and Thompson streets, . . . . .        | Philadelphia.          |
| Gerhard, Charles C., . . . .    | 55 N. Thirty-ninth street, . . . . .         | Philadelphia.          |
| Gerhard, Luther, . . . .        | 2152 N. Front street, . . . . .              | Philadelphia.          |

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| Gerhard, Samuel, . . .     | 1400 Hanover street, . . . . .      | Philadelphia.        |
| Gerhard, Wm. H., . . .     | Tacony, . . . . .                   | Philadelphia county. |
| Gerhart, Erasmus, . . .    | Millersburg, . . . . .              | Berks county.        |
| Gerry, Elbridge H., . . .  | Shrewsbury, . . . . .               | York county.         |
| Gerry, James, . . . . .    | Shrewsbury, . . . . .               | York county.         |
| Gery, Ambrose M., . . .    | Coopersburg, . . . . .              | Lehigh county.       |
| Gibble, Elmer E., . . .    | Sixth and Venango streets, . . . .  | Philadelphia.        |
| Gibboney, Wm. M., . . .    | Belleville, . . . . .               | Mifflin county.      |
| Gibbs, Godfrey, . . . .    | 1017 Huntingdon street, . . . . .   | Philadelphia.        |
| Gibson, Clifford W., . . . | Weatherly, . . . . .                | Carbon county.       |
| Gibson, Willis O., . . .   | Spring Creek, . . . . .             | Warren county.       |
| Giebner, Robert E., . . .  | Sandy Lake, . . . . .               | Mercer county.       |
| Giffard, William H., . . . | 2500 N. Broad street, . . . . .     | Philadelphia.        |
| Gilbert, Charles H., . . . | Great Bend, . . . . .               | Susquehanna county.  |
| Gilbert, Frank L., . . .   | Knoxville, . . . . .                | Tioga county.        |
| Gilbert, Joshua A., . . .  | Carmichaels, . . . . .              | Greene county.       |
| Gilbert, Wm. E., . . . .   | Harrison Valley, . . . . .          | Potter county.       |
| Gildner, David, . . . .    | Rockwood, . . . . .                 | Somerset county.     |
| Gillette, Orve R., . . .   | North East, . . . . .               | Erie county.         |
| Gillis, Claudius V., . . . | Kane, . . . . .                     | McKean county.       |
| Gillis, James H., . . . .  | Kane, . . . . .                     | McKean county.       |
| Gillispie, Charles B., . . | Freeport, . . . . .                 | Armstrong county.    |
| Gilmore, J. W., . . . .    | New Stanton, . . . . .              | Westmoreland county. |
| Gingrich, Edward H., . .   | 823 N. Broad street, . . . . .      | Philadelphia.        |
| Gingrich, Ezra H., . . .   | 3212 Frankford avenue, . . . . .    | Philadelphia.        |
| Gingrich, John A., . . .   | 334 Penn street, . . . . .          | Reading.             |
| Givens, Charles A., . . .  | McKee's Rocks, . . . . .            | Allegheny county.    |
| Givin, William F., . . .   | 1641 Franklin street, . . . . .     | Philadelphia.        |
| Giamser, Anton, . . . .    | 234 Ohio street, . . . . .          | Allegheny.           |
| Glatfelter, Henry K., . .  | Abbottstown, . . . . .              | Adams county.        |
| Gleim, Francis H. E., . .  | 5 N. Ninth street, . . . . .        | Lebanon.             |
| Gleim, Perry M., . . . .   | Rebecca st. and Allegheny av., . .  | Allegheny.           |
| Gleim, William B., . . .   | Blockley Hospital, . . . . .        | Philadelphia.        |
| Glenn, William S., . . .   | State College, . . . . .            | Centre county.       |
| Glentworth, W. W., . . .   | 817 Race street, . . . . .          | Philadelphia.        |
| Glick, George C., . . . .  | Pittston, . . . . .                 | Luzerne county.      |
| Glossford, Samuel J., . .  | Greenville, . . . . .               | Indiana county.      |
| Glover, Joseph E., . . .   | Little Cooley, . . . . .            | Crawford county.     |
| Gmelin, Charles H., . . .  | Third and Poplar streets, . . . . . | Philadelphia.        |
| Goehrig, Thomas M., . . .  | 525 E. Third street, . . . . .      | Williamsport.        |
| Goehrig, William, . . . .  | 525 E. Third street, . . . . .      | Williamsport.        |
| Goess, George C., Jr., . . | 1309 N. Sixth street, . . . . .     | Philadelphia.        |
| Goldaine, James F., . . .  | 402 Smithfield street, . . . . .    | Pittsburgh.          |
| Goldsmith, George W., . .  | Seventh and Thompson streets, . .   | Philadelphia.        |
| Goldsmith, Henry B., . .   | West Newton, . . . . .              | Westmoreland county. |
| Goldsmith, John W., . . .  | Parker City, . . . . .              | Armstrong county.    |
| Good, Adrianna, . . . .    | Bridesburg, . . . . .               | Philadelphia county. |
| Good, Benjamin M., . . .   | 720 Berks street, . . . . .         | Philadelphia.        |
| Good, Harvey J. T., . . .  | 803 Hamilton street, . . . . .      | Allentown.           |
| Good, John F., . . . .     | New Cumberland, . . . . .           | Cumberland county    |
| Good, Wm. F. P., . . . .   | 803 Hamilton street, . . . . .      | Allentown.           |
| Goodman, Edward E., . .    | 812 Eighth avenue, . . . . .        | Altoona.             |
| Goodwin, John W., . . .    | Millvale, . . . . .                 | Allegheny county     |
| Goodyear, Milphred S., .   | . . . . .                           | Philadelphia.        |
| Gordon, John F., . . . .   | Rochester, . . . . .                | Beaver county.       |
| Gordon, William H., . . .  | 4302 Frankford avenue, . . . . .    | Philadelphia.        |
| Gordon, Willis G., . . .   | Towanda, . . . . .                  | Bradford county.     |

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| Gosh, Elizabeth, . . . . .      | 36 Mill street, . . . . .                  | Danville.            |
| Gosh, William E., . . . . .     | 36 Mill street, . . . . .                  | Danville.            |
| Gossling, Thomas R., . . . . .  | 1000 S. Seventeenth street, . . . . .      | Philadelphia.        |
| Gotwalt, S. Horace, . . . . .   | 113 S. Beaver street, . . . . .            | York.                |
| Goudy, Samuel P., . . . . .     | Garland, . . . . .                         | Warren county.       |
| Gould, John R., . . . . .       | Berwick, . . . . .                         | Columbia county.     |
| Gracey, Archibald A., . . . . . | 2249 N. Twenty-eighth street, . . . . .    | Philadelphia.        |
| Grady, George W., . . . . .     | Main and De Kalb streets, . . . . .        | Norristown.          |
| Graf, Albert F., . . . . .      | 1201 Columbia avenue, . . . . .            | Philadelphia.        |
| Graff, Emil, . . . . .          | 318 Race street, . . . . .                 | Philadelphia.        |
| Graham, Edward W., . . . . .    | Clearfield, . . . . .                      | Clearfield county.   |
| Graham, George M., . . . . .    | Whitestown, . . . . .                      | Butler county.       |
| Graham, John D., . . . . .      | Indiana, . . . . .                         | Indiana county.      |
| Graham, John L., . . . . .      | Morton, . . . . .                          | Delaware county.     |
| Graham, Robert, . . . . .       | Brownsville, . . . . .                     | Fayette county.      |
| Grahame, George H., . . . . .   | 35 N. Twelfth street, . . . . .            | Philadelphia.        |
| Granger, Lewis E., . . . . .    | Rush, . . . . .                            | Susquehanna county.  |
| Grant, John G., . . . . .       | Ladysburg, . . . . .                       | Bradford county.     |
| Grant, Ulysses S., . . . . .    | Thirteenth and Race streets, . . . . .     | Philadelphia.        |
| Graver, James D., . . . . .     | Trappe, . . . . .                          | Montgomery county.   |
| Graves, Frank M., . . . . .     | Jermyn, . . . . .                          | Lackawanna county.   |
| Graves, John M., . . . . .      | Jermyn, . . . . .                          | Lackawanna county.   |
| Gray, Alexander R., . . . . .   | Jenkintown, . . . . .                      | Montgomery county.   |
| Gray, J. Frank, . . . . .       | Jersey Shore, . . . . .                    | Lancaster county.    |
| Gray, William J., . . . . .     | 203 Centre avenue, . . . . .               | Pittsburgh.          |
| Grayson, John L., . . . . .     | 710 S. Second street, . . . . .            | Philadelphia.        |
| Green, B. Wallace, . . . . .    | Twenty-second and Green streets, . . . . . | Philadelphia.        |
| Green, Charles W., . . . . .    | 1136 Saverly street, . . . . .             | Philadelphia.        |
| Green, Elisha, . . . . .        | Plumville, . . . . .                       | Indiana county.      |
| Green, Francis P., . . . . .    | Bellefonte, . . . . .                      | Centre county.       |
| Green, Howard L., . . . . .     | 3250 Ridge avenue, . . . . .               | Philadelphia.        |
| Green, James H., . . . . .      | Bellefonte, . . . . .                      | Centre county.       |
| Green, John W., . . . . .       | Kinzua, . . . . .                          | Warren county.       |
| Green, Thomas A., . . . . .     | Bradford, . . . . .                        | McKean county.       |
| Greenawald, Benj. S., . . . . . | Chester, . . . . .                         | Delaware county.     |
| Greenawald, J. S., . . . . .    | Chester, . . . . .                         | Delaware county.     |
| Greenawalt, Wm. G., . . . . .   | Chambersburg, . . . . .                    | Franklin county.     |
| Greene, Charles V., . . . . .   | 13 Public square, . . . . .                | Bradford.            |
| Greene, Ellsworth H., . . . . . | West Grove, . . . . .                      | Chester county.      |
| Greene, Frank N., . . . . .     | 162 Richmond street, . . . . .             | Philadelphia.        |
| Greene, George K., . . . . .    | 1738 Christian street, . . . . .           | Philadelphia.        |
| Greenfield, Frank G., . . . . . | Edinboro', . . . . .                       | Erie county.         |
| Greenfield, Lewis T., . . . . . | Sixth street and Penn avenue, . . . . .    | Pittsburgh.          |
| Greenman, Dexter, . . . . .     | New Hamburg, . . . . .                     | Mercer county.       |
| Greer, Harry L., . . . . .      | Greensburg, . . . . .                      | Westmoreland county. |
| Gregg, C. E., . . . . .         | Blain, . . . . .                           | Perry county.        |
| Gregory, John E., . . . . .     | Gordon, . . . . .                          | Schuylkill county.   |
| Gregory, Herbert T., . . . . .  | Wyoming, . . . . .                         | Luzerne county.      |
| Greineisen, F. C., . . . . .    | 746 W. Carson street, . . . . .            | Pittsburgh.          |
| Grenoble, Isaac J., . . . . .   | Spring Mills, . . . . .                    | Centre county.       |
| Greenville, Thos. B., . . . . . | Tunkhannock, . . . . .                     | Wyoming county.      |
| Gress, Edward, . . . . .        | Manor Station, . . . . .                   | Westmoreland county. |
| Grewer, Edward, . . . . .       | 1836 Germantown avenue, . . . . .          | Philadelphia.        |
| Griesemer, John C., . . . . .   | 801 Penn street, . . . . .                 | Reading.             |
| Griffin, Charles B., . . . . .  | Lewisburg, . . . . .                       | Union county.        |
| Griffin, Harry R., . . . . .    | 1327 Vine street, . . . . .                | Philadelphia.        |
| Griffin, Howard E., . . . . .   | 204 W. Market street, . . . . .            | Scranton.            |



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|-------------------------|-------------------------------|------------------------|
| Griffin, John M.,       | 402 Smithfield street,        | Pittsburgh.            |
| Griffith, Albert R.,    | Oil City,                     | Venango county.        |
| Griffith, Alfonse D.,   | 225 Centre street,            | Oil City.              |
| Griffith, Charles,      | Johnstown,                    | Cambria county.        |
| Griffith, Edward J.,    | 225 Centre street,            | Oil City.              |
| Griffith, Fred T.,      | 295 Sycamore street,          | Oil City.              |
| Griffith, John W.,      | Kane,                         | McKean county.         |
| Griffith, Joseph T.,    | 116 N. Eleventh street,       | Philadelphia.          |
| Griffith, Margaret J.,  | 301 Grant street,             | Pittsburgh.            |
| Griffith, Matthew M.,   | De Haven,                     | Allegheny county.      |
| Griffith, Thomas B.,    | Montoursville,                | Lycoming county.       |
| Griffith, William H.,   | Oil City,                     | Venango county.        |
| Griffith, William J.,   | 301 Grant street,             | Pittsburgh.            |
| Griffith, John L.,      | Taylorville,                  | Lackawanna county.     |
| Grime, Robert T.,       | 732 S. Nineteenth street,     | Philadelphia.          |
| Grimshaw, James B.,     | 101 S. Main street,           | Scranton.              |
| Groff, Frank B.,        | 4099 Lancaster avenue,        | Philadelphia.          |
| Groff, John A.,         | 322 N. Sixth street,          | Reading.               |
| Groff, John C.,         | Mt. Joy,                      | Lancaster county.      |
| Groom, Ellerslie W.,    | Bristol,                      | Bucks county.          |
| Groome, John C.,        | Carlisle,                     | Cumberland county.     |
| Grosh, Daniel M.,       | East Mauch Chunk,             | Carbon county.         |
| Grosh, P. A.,           | Shamokin,                     | Northumberland county. |
| Gross, C. L.,           | Pen Argyl,                    | Northampton county.    |
| Gross, Edward Z.,       | 119 Market street,            | Harrisburg.            |
| Gross, Henry S.,        | 1451 S. Second street,        | Philadelphia.          |
| Gross, Louis M.,        | 1433 S. Sixth street,         | Philadelphia.          |
| Grosser, J. J.,         | Emlenton,                     | Venango county.        |
| Grossman, Robert J.,    | Coaltown,                     | Butler county.         |
| Grove, John E.,         | Seventeenth and Reed streets, | Philadelphia.          |
| Grover, Meredith E.,    | Freeland,                     | Luzerne county.        |
| Grover, Warren W.,      | Luzerne,                      | Luzerne county.        |
| Groves, John D.,        | Front and Catharine streets,  | Philadelphia.          |
| Grubbins, Charles H.,   | Fifteenth and Race streets,   | Philadelphia.          |
| Grubbs, Adam M.,        | 1120 Penn avenue,             | Pittsburgh.            |
| Grube, George W.,       | Gallitzin,                    | Cambria county.        |
| Guest, Samuel S.,       | 613 N. Fourth street,         | Philadelphia.          |
| Guise, P. Nettleton,    | Twentieth and South streets,  | Philadelphia.          |
| Gunn, C. T.,            | Springboro',                  | Crawford county.       |
| Gutelius, Edwin S.,     | 2921 Penn avenue,             | Pittsburgh.            |
| Gutelius, Lydia E.,     | 2921 Penn avenue,             | Pittsburgh.            |
| Guthrie, Clinton,       | 144 S. Main street,           | Wilkes-Barre.          |
| Haak, Harry C.,         | Pine Grove,                   | Schuylkill county.     |
| Hackenberg, G. W.,      | Bainbridge,                   | Lancaster county.      |
| Hackenberg, G. W., Jr., | Bainbridge,                   | Lancaster county.      |
| Hacker, Isaac B.,       | Denver,                       | Lancaster county.      |
| Hackett, George W.,     | Shingle House,                | Potter county.         |
| Hackett, Henry J.,      | 2461 N. Fifth street,         | Philadelphia.          |
| Hackney, George W.,     | Uniontown,                    | Fayette county.        |
| Hadfield, Edward J.,    | Jefferson College,            | Philadelphia.          |
| Haenchen, C. Eugene,    | 3844 Haverford street,        | Philadelphia.          |
| Haentze, Charles H.,    | 625 N. Second street,         | Philadelphia.          |
| Haering, David,         | 115 Juniata street,           | Philadelphia.          |
| Haering, George V.,     | 123 Ohio street,              | Allegheny.             |
| Hagan, William C.,      | 255 Federal street,           | Allegheny.             |
| Hagenbuch, Chas. H.,    | Shenandoah,                   | Schuylkill county.     |

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|-------------------------|----------------------------------|---------------------|
| Hagenbuch, Geo. M.,     | 23 W. Fourth street,             | Williamsport.       |
| Hagenbuch, Jas. H.,     | Mahanoy City,                    | Schuylkill county.  |
| Hagenbuch, Owen,        | 400 Northampton street,          | Easton.             |
| Hahn, John H.,          | Twentieth and Ellsworth streets, | Philadelphia.       |
| Haig, Charles R.,       | 1901 Master street,              | Philadelphia.       |
| Haine, G. F.,           | Sharpsburg,                      | Allegheny county.   |
| Haines, Charles A.,     | East Canton,                     | Bradford county.    |
| Haines, John B.,        | 713 Gray's Ferry road,           | Philadelphia.       |
| Hair, Edward,           | Roaring Spring,                  | Blair county.       |
| Hair, Wilson E.,        | Roaring Spring,                  | Blair county.       |
| Haley, John B.,         | New Wilmington,                  | Lawrence county.    |
| Haley, John J.,         | 4552 Germantown avenue,          | Germantown.         |
| Hall, Charles H.,       | Dallas,                          | Luzerne county.     |
| Hall, Henry M.,         | 242 N. Fifth street,             | Philadelphia.       |
| Hall, Horace,           | 1250 N. Nineteenth street,       | Philadelphia.       |
| Hall, Humes,            | 3264 Chestnut Street,            | Philadelphia.       |
| Hall, James C.,         | Millerstown,                     | Perry county.       |
| Hall, Jesse B.,         | 53 E. Main street,               | Norristown.         |
| Hall, Marlborough,      | 3348 Market street,              | Philadelphia.       |
| Hall, Peter,            | 630 State street,                | Erie.               |
| Hall, William E.,       | Renovo,                          | Clinton county.     |
| Hallowell, Chas. W.,    | 1540 Wharton street,             | Philadelphia.       |
| Hallowell, H. G. J.,    | Conshohocken,                    | Montgomery county   |
| Hallowell, James A.,    | 1410 Chestnut street,            | Philadelphia.       |
| Hamaker, Daniel H.,     | 122 Market street,               | Harrisburg.         |
| Hamberg, Samuel T.,     | Frankford,                       | Philadelphia.       |
| Hamilton, Daniel C.,    | 27 Ohio street,                  | Allegheny.          |
| Hamilton, John,         | Shoustown,                       | Allegheny county.   |
| Hamilton, John D.,      | Coraopolis,                      | Allegheny county.   |
| Hamilton, Levi M.,      | 231 Franklin street,             | Allegheny.          |
| Hamilton, Sylvester S., | Punxsutawney,                    | Jefferson county.   |
| Hamilton, Thomas J.,    | Beaver Falls,                    | Beaver county.      |
| Hamilton, W. H.,        | Oakdale Station,                 | Allegheny county.   |
| Hamilton, Wm. M.,       | Beaver Falls,                    | Beaver county.      |
| Hamlin, Benj. B.,       | 824 N. Sixth street,             | Harrisburg.         |
| Hamman, Wm. E.,         | 201 Northampton street,          | Erie.               |
| Hammerquist, C. E.,     | 3741 Lancaster avenue,           | Philadelphia.       |
| Hammond, Arthur B.,     | 1412 Walnut street,              | Philadelphia.       |
| Hammond, Chas. E.,      | 6 W. Market street,              | West Chester.       |
| Hammond, C. N.,         | Bentley Creek,                   | Bradford county.    |
| Hammond, Samuel K.,     | 6 W. Market street,              | West Chester.       |
| Hanch, Edward,          | Homestead,                       | Allegheny county.   |
| Hanch, Louis,           | Mittenberger and Locust streets, | Pittsburgh.         |
| Hancock, Chas. W.,      | 3421 Spring Garden street,       | Philadelphia.       |
| Hankins, John R.,       | Forest City,                     | Susquehanna county. |
| Hannon, James B.,       | Orangeville,                     | Columbia county.    |
| Hansell, George,        | 2000 Market street,              | Philadelphia.       |
| Hanson, William H.,     | Spruce and Willow streets,       | Norristown.         |
| Harbaugh, W. L.,        | Mercersburg,                     | Franklin county.    |
| Harding, Henry,         | Fremont,                         | Snyder county.      |
| Harding, Henry,         | Tenth and Lombard streets,       | Philadelphia.       |
| Harding, Sanford,       | Shickshinny,                     | Luzerne county.     |
| Hardy, George,          | Crafton,                         | Allegheny county.   |
| Hardy, Robert J.,       | Mansfield,                       | Allegheny county.   |
| Hare, Albert,           | Tarentum,                        | Allegheny county.   |
| Hargrave, Omer P.,      | Homestead,                       | Allegheny county.   |
| Hargreaves, Thos. W.,   | 2725 N. Front street,            | Philadelphia.       |

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| Hargreaves, William,    | 2725 N. Front street,             | Philadelphia.          |
| Haring, Henry G.,       | Seventh and Diamond streets,      | Philadelphia.          |
| Harking, James,         | Mount Pleasant,                   | Westmoreland county.   |
| Harner, Fernando R.,    | Market and Nassau streets,        | Danville.              |
| Harpel, Luther G.,      | 524 N. Seventh street,            | Lebanon.               |
| Harrigan, John W.,      | 2683 Frankford avenue,            | Philadelphia.          |
| Harris, Charles M.,     | 127 Penn avenue,                  | Scranton.              |
| Harris, Daniel M.,      | Eighteenth and Market streets,    | Philadelphia.          |
| Harris, Edwin,          | Twentieth and Christian streets,  | Philadelphia.          |
| Harris, E. Park,        | 9 N. Church street,               | West Chester.          |
| Harris, George W.,      | 819 S. Twentieth street,          | Philadelphia.          |
| Harris, J. C.,          | Venango,                          | Crawford county.       |
| Harris, Marshall L.,    | 19 Main street,                   | Bradford.              |
| Harris, Perry B.,       | 113 Federal street,               | Allegheny.             |
| Harris, William,        | Hamburg,                          | Berks county.          |
| Harris, William,        | 2229 Spruce street,               | Philadelphia.          |
| Harrison, F. E.,        | Ridley Park,                      | Delaware county.       |
| Harrower, Alice T.,     | Ashley,                           | Luzerne county.        |
| Harshberger, Abraham,   | 5512 Vine street,                 | Philadelphia.          |
| Hart, George F.,        | 328 W. Fourth street,             | Williamsport.          |
| Hart, Joseph R.,        | 108 Public square,                | Wilkes-Barre.          |
| Harting, Carl E. B.,    | 62 Stevenson street,              | Pittsburgh.            |
| Hartman, Frank G.,      | 336 S. Second street,             | Philadelphia.          |
| Hartman, Harry Y.,      | Orwigsburg,                       | Schuylkill county.     |
| Hartman, J. Kabel,      | 115 E. Market street,             | West Chester.          |
| Hartman, Samuel,        | Liberty,                          | Tioga county.          |
| Hartman, Steele G.,     | New Bethlehem,                    | Clarion county.        |
| Hartwig, Carl,          | 4016 Butler street,               | Pittsburgh.            |
| Hartzell, Alfred K.,    | Allentown,                        | Lehigh county.         |
| Hartzell, William L.,   | 1737 Marshall street,             | Philadelphia.          |
| Harvey, Elisha G.,      | Conemaugh,                        | Cambria county.        |
| Harvey James W.,        | Greensburg,                       | Westmoreland county.   |
| Harvey, Nathaniel C.,   | Peale,                            | Clearfield county.     |
| Hassinger, S. E. R.,    | Twenty-third st. and Fairm't av., | Philadelphia.          |
| Hastings, Nelson H.,    | Austin,                           | Potter county.         |
| Hatfield, Mrs. Lena E., | Tunkhannock,                      | Wyoming county.        |
| Hatfield, S. Grant,     | Tunkhannock,                      | Wyoming county.        |
| Hatfield, Supplee S.,   | Tunkhannock,                      | Wyoming county.        |
| Haupt, Fred L.,         | Sunbury,                          | Northumberland county. |
| Hause, George S.,       | 8 N. George street,               | York.                  |
| Hause, Robert M.,       | 8 N. George street,               | York.                  |
| Hausman, Fred W.,       | 917 Hutchinson street,            | Philadelphia.          |
| Haverstick, Joseph B.,  | 5 S. Hanover street,              | Carlisle.              |
| Haverstick, M. C.,      | 5 S. Hanover street,              | Carlisle.              |
| Haverstick, S. A.,      | 5 S. Hanover street,              | Carlisle.              |
| Haviland, Sanford C.,   | 730 State street,                 | Erie.                  |
| Hawthorn, Samuel,       | Grand View avenue,                | Pittsburgh.            |
| Hay, Charles L.,        | Du Bois,                          | Clearfield county.     |
| Hay, Harry A.,          | 231 E. Market street,             | York.                  |
| Hay, John William,      | 1402 N. Third street,             | Harrisburg.            |
| Hay, Marion R.,         | Princeton,                        | Lawrence county.       |
| Hayes, James F.,        | 200 S. Broad street,              | Philadelphia.          |
| Hayes, John C.,         | Mifflinburg,                      | Union county.          |
| Hayes, John W.,         | 3 Main street,                    | Troy.                  |
| Hayes, William D. E.,   | Shippensburg,                     | Cumberland county.     |
| Hayes, William N.,      | 200 S. Broad street,              | Philadelphia.          |
| Hayhurst, Henry T.,     | 4559 Germantown avenue,           | Philadelphia.          |

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| Hayhurst, Susan, . . .       | 22d street and N. College avenue,          | Philadelphia.          |
| Hazlett, Alfred W., . . .    | Tarentum, . . . . .                        | Allegheny county.      |
| Hazlett, Joseph H., . . .    | Derry Station, . . . . .                   | Westmoreland county.   |
| Headley, Harry H., . . .     | Bristol, . . . . .                         | Bucks county.          |
| Healy, Elizabeth F., . . .   | 419 Wyoming avenue, . . . . .              | West Pittston.         |
| Hebsacker, William F., . . . | 531 W. York street, . . . . .              | Philadelphia.          |
| Heck, Emile E., . . . .      | 59 Federal street, . . . . .               | Allegheny.             |
| Heckenberger, Wm., . . .     | 167 Front street, . . . . .                | Catasauqua.            |
| Hecker, Jacob K., . . . .    | 1414 N. Second street, . . . . .           | Philadelphia.          |
| Heckerman, E. D., . . . .    | Bedford, . . . . .                         | Bedford county.        |
| Heckerman, M. P., . . . .    | Bedford, . . . . .                         | Bedford county.        |
| Heerlein, Arno W., . . . .   | Tarentum, . . . . .                        | Allegheny county.      |
| Heffley, Alizanna M., . . .  | Berlin, . . . . .                          | Somerset county.       |
| Heffley, Harry B., . . . .   | 1225 Oxford street, . . . . .              | Philadelphia.          |
| Heiberger Eugene S., . . .   | 727 Hamilton street, . . . . .             | Allentown.             |
| Heilman, Amos B., . . . .    | Clarion, . . . . .                         | Clarion county.        |
| Heilman, Robert B., . . . .  | Lebanon, . . . . .                         | Lebanon county.        |
| Heilman, R. P., . . . . .    | 21 E. Fourth street, . . . . .             | Emporium.              |
| Heim, Henry L., . . . . .    | 1725 N. Eleventh street, . . . . .         | Philadelphia.          |
| Heineken, Frederick, . . .   | 1801 Penn avenue, . . . . .                | Pittsburgh.            |
| Heinitsh, Charles A., . . .  | 16 E. King street, . . . . .               | Lancaster.             |
| Heinitsh, Sigmund W., . . .  | 16 E. King street, . . . . .               | Lancaster.             |
| Hemtzelman, Jos. A., . . .   | 2000 Ridge avenue, . . . . .               | Philadelphia.          |
| Heintzelman, R. W., . . .    | Selinsgrove, . . . . .                     | Snyder county.         |
| Heiser, Edwin S., . . . .    | Mt. Carmel, . . . . .                      | Northumberland county. |
| Heiser, Elmer E., . . . .    | Lewisburg, . . . . .                       | Union county.          |
| Heiser, Willis D., . . . .   | Lewisburg, . . . . .                       | Union county.          |
| Heistand, William H., . . .  | 711 S. Fifth street, . . . . .             | Philadelphia.          |
| Heitshu, Daniel H., . . . .  | 311 N. Queen street, . . . . .             | Lancaster.             |
| Heizenroeder, W. H., . . .   | 15 Washington avenue, . . . . .            | Allegheny.             |
| Helfrich, L. S., . . . . .   | 1302 Lincoln square, . . . . .             | Philadelphia.          |
| Heller, J. A., . . . . .     | Factoryville, . . . . .                    | Wyoming county.        |
| Hellwich, Maximilian, . . .  | 2300 Berks street, . . . . .               | Philadelphia.          |
| Hellwig, George D., . . . .  | Austin, . . . . .                          | Potter county.         |
| Hellwig, Hattie E., . . . .  | Austin, . . . . .                          | Potter county.         |
| Helm, G. C. F., Jr., . . . . | 220 Vine street, . . . . .                 | Philadelphia.          |
| Helmbold, Albert L., . . . . | 830 Chestnut street, . . . . .             | Philadelphia.          |
| Helwig, H. P., . . . . .     | Mt. Carmel, . . . . .                      | Northumberland county. |
| Hendershott, N. J., . . . .  | Bloomsburg, . . . . .                      | Columbia county.       |
| Henderson, A. K., . . . . .  | 300 Frankstown avenue, . . . . .           | Pittsburgh.            |
| Henderson, C. R., . . . . .  | 35 Spring street, . . . . .                | Titusville.            |
| Henderson, E. B., . . . . .  | Brookville, . . . . .                      | Jefferson county.      |
| Henderson, Elmer L., . . . . | Blairsville, . . . . .                     | Indiana county.        |
| Henderson, Geo. W., . . . .  | Rileyville, . . . . .                      | Wayne county.          |
| Henderson, Robert H., . . .  | Chester, . . . . .                         | Delaware county.       |
| Henderson, Wm. W., . . . .   | Brookville, . . . . .                      | Jefferson county.      |
| Hendrick, Edgar L., . . . .  | Friendsville, . . . . .                    | Susquehanna county.    |
| Hennessy, Sherman F., . . .  | 1333 N. Seventeenth street, . . . . .      | Philadelphia.          |
| Henry, George S., . . . . .  | Duncannon, . . . . .                       | Perry county.          |
| Henry, Samuel C., . . . .    | Sixty-first and Lombard streets, . . . . . | Philadelphia.          |
| Henszey, Samuel C., . . . .  | 3320 Hamilton street, . . . . .            | Philadelphia.          |
| Henwood, Charles, . . . .    | 1909 Main avenue, . . . . .                | Scranton.              |
| Henwood, Sydney R., . . .    | 1909 Main avenue, . . . . .                | Scranton.              |
| Hepburn, John, . . . . .     | Lewisburg, . . . . .                       | Union county.          |
| Hepler, Albert J., . . . .   | West Millville, . . . . .                  | Clarion county.        |
| Hepler, William C., . . . .  | 400 Penn street, . . . . .                 | Reading.               |
| Hergesheimer, D. S., . . .   | Clifton Heights, . . . . .                 | Delaware county.       |



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| Herman, William F.,    | . 29 Anderson street,            | Allegheny.             |
| Herr, Elias B.,        | . 334 E. King street,            | Lancaster.             |
| Herrman, Ernst W.,     | . 716 Race street,               | Philadelphia.          |
| Hersh, Alfred C.,      | . Lebanon,                       | Lebanon county.        |
| Hertel, Frederick,     | . 2683 Frankford avenue,         | Philadelphia.          |
| Hertel, Fred G.,       | . 3202 Sansom street,            | Philadelphia.          |
| Hertsch, Bernhard A.,  | . 4050 Germantown avenue,        | Philadelphia.          |
| Herwick, Charles,      | . 110 Green street,              | Philadelphia.          |
| Herwig, Emil M.,       | . 1732 Girard avenue,            | Philadelphia.          |
| Hess, Edwin H.,        | . 1530 N. Sixth street,          | Harrisburg.            |
| Hess, Henry N.,        | . Fryburg,                       | Clarion county.        |
| Hess, Isaac C.,        | . Duncansville,                  | Blair county.          |
| Hess, Jacob M.,        | . 29 N. Front street,            | Steelton.              |
| Hess, James M.,        | . East Mauch Chunk,              | Carbon county.         |
| Hess, Lemuel B.,       | . Shamokin,                      | Northumberland county. |
| Hesske, August R.,     | . 610 Franklin street,           | Philadelphia.          |
| Hetherington, Thomas,  | . 2642 Richmond street,          | Philadelphia.          |
| Hetrick, D. A.,        | . Indiana,                       | Indiana county.        |
| Hetrick, R. D.,        | . Indiana,                       | Indiana county.        |
| Hewitt, Andrew C.,     | . 39 E. Walnut lane,             | Germantown.            |
| Hewitt, Charles E.,    | . Ninth and Race streets,        | Philadelphia.          |
| Hewitt, Samuel E.,     | . 59 Fulton street,              | Pittsburgh.            |
| Heyl, Frederick W.,    | . 722 S. Twenty-second street,   | Philadelphia.          |
| Hibshman, Miles W.,    | . 1510 Callowhill street,        | Philadelphia.          |
| Hickman, Wm. H.,       | . 336 S. Second street,          | Philadelphia.          |
| Hieber, George A.,     | . 1251 Penn avenue,              | Pittsburgh.            |
| Hieber, Theo. W. D.,   | . 1251 Penn avenue,              | Pittsburgh.            |
| Hiestand, Daniel,      | . Eighth and Chew streets,       | Allentown.             |
| Hiestand, John S.,     | . Twentieth and Parrish streets, | Philadelphia.          |
| Higbee, William S.,    | . 1717 S. Eighth street,         | Philadelphia.          |
| Higgate, Milford O.,   | . 4202 Lancaster avenue,         | Philadelphia.          |
| Higgins, Jonathan M.,  | . 1961 Germantown avenue,        | Philadelphia.          |
| Hildebrand, Louis W.,  | . 2403 E. York street,           | Philadelphia.          |
| Hildebrand, Thos. E.,  | . Indiana,                       | Indiana county.        |
| Hildebrand, Walter E., | . Indiana,                       | Indiana county.        |
| Hilderbrand, Henry H., | . Greenfield,                    | Mercer county.         |
| Hildreth, Chas. B.,    | . 603 Gray's Ferry road,         | Philadelphia.          |
| Hile, Isaiah W.,       | . Sunbury,                       | Northumberland county. |
| Hill, Jacob F.,        | . Nanticoke,                     | Luzerne county.        |
| Hill, Justin L.,       | . Third and Mulberry streets,    | Williamsport.          |
| Hill, Samuel H.,       | . 711 State street,              | Erie.                  |
| Hill, Smith W.,        | . Hope Church,                   | Allegheny county.      |
| Hill, W. B.,           | . Laporte,                       | Sullivan county.       |
| Hillan, John M.,       | . 3 S. Main street,              | Shenandoah.            |
| Hillegas, Oliver J.,   | . 1206 N. Sixth street,          | Harrisburg.            |
| Hiller, W. L.,         | . 4401 Butler street,            | Pittsburgh.            |
| Hillier, Joseph W.,    | . West Middlesex,                | Mercer county.         |
| Hilton, Henry B.,      | . Kittanning,                    | Armstrong county       |
| Hilton, Thomas C.,     | . Lock Haven,                    | Clinton county.        |
| Himmelberger, H. W.,   | . Jonestown,                     | Lebanon county.        |
| Himmelwright, F. E.,   | . 313 Diamond street,            | Philadelphia.          |
| Hine, Marks P.,        | . Northumberland,                | Northumberland county. |
| Hines, John P.,        | . Stoneboro',                    | Mercer county.         |
| Hines, Joseph,         | . Athens,                        | Bradford county.       |
| Hines, Philip H. T.,   | . 3843 Germantown avenue,        | Philadelphia.          |
| Hinzman, Wm. W.,       | . Rufi's Dale,                   | Westmoreland county.   |
| Hiorns, Lucian F.,     | . Olyphant,                      | Lackawanna county.     |

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| Hixenbaugh, Wm. S.,    | . 40 Sixth street,                | Pittsburgh.            |
| Hoagland, Wm. J.,      | . 9 W. Broad street,              | Hazleton.              |
| Hoch, Aquila,          | . 1634 Columbia avenue,           | Philadelphia.          |
| Hoch, Jacob,           | . 1634 Columbia avenue,           | Philadelphia.          |
| Hoch, William T.,      | . 56 N. Queen street,             | Lancaster.             |
| Hodgkins, Chas. W.,    | . Liberty,                        | Tioga county.          |
| Hodgkins, Israel M.,   | . Scottdale,                      | Westmoreland county.   |
| Hodgson, James N.,     | . 22 N. Centre street,            | Pottsville.            |
| Hodgson, Thos. S.,     | . Rochester,                      | Beaver county.         |
| Hodie, John S.,        | . 161 Buena Vista,                | Allegheny.             |
| Hoehn, William,        | . 52 S. Twelfth street,           | Pittsburgh.            |
| Hoelscher, Matthias,   | . 2631 Carson street,             | Pittsburgh.            |
| Hoey, Albert M.,       | . Harrison City,                  | Westmoreland county.   |
| Hoey, James W.,        | . Brockwayville,                  | Jefferson county.      |
| Hoffa, Charles W.,     | . Dushore,                        | Sullivan county.       |
| Hoffa, J. Wilson,      | . 1342 N. Sixth street,           | Harrisburg.            |
| Hoffecker, Luther R.,  | . 1941 Spring Garden street,      | Philadelphia.          |
| Hoffman, C. Ferdinand, | . 528 Arch street,                | Philadelphia.          |
| Hoffman, Harry N.,     | . Mifflinburg,                    | Union county.          |
| Hoffman, J. L.,        | . 502 N. Ninth street,            | Allentown.             |
| Hognet, Louis A.,      | . Bristol,                        | Bucks county.          |
| Hogue, Maggie F.,      | . Houtzdale,                      | Clearfield county.     |
| Hohl, August,          | . 341 Girard avenue,              | Philadelphia.          |
| Hohl, Stewart M.,      | . 5 S. Third street,              | Easton.                |
| Hoke, Martin,          | . Spring Grove,                   | York county.           |
| Holbert, Lyman B.,     | . Shenandoah,                     | Schuylkill county.     |
| Holcomb, Frank B.,     | . Westfield,                      | Tioga county.          |
| Holcomb, Charles D.,   | . Union,                          | Tioga county.          |
| Holcombe, Hallis, A.,  | . LeRoy,                          | Bradford county.       |
| Holden, Elnathan,      | . 63 Federal street,              | Allegheny.             |
| Holden, Fred. E.,      | . 63 Federal street,              | Allegheny.             |
| Holden, Louis H.,      | . 63 Federal street,              | Allegheny.             |
| Holland, Alfred P.,    | . DuBois,                         | Clearfield county.     |
| Holland, Edgar A.,     | . 3010 Powelton avenue,           | Philadelphia.          |
| Holland, George,       | . 603 Gray's Ferry Road,          | Philadelphia.          |
| Holland, Samuel S.,    | . Smithfield st. and Liberty av., | Pittsburgh.            |
| Hollenback, David S.,  | . Shamokin,                       | Northumberland county. |
| Hollinger, Israel,     | . Goodville,                      | Lancaster county.      |
| Hollopeter, Daniel F., | . Shickshinny,                    | Luzerne county.        |
| Hollopeter, S. G. M.,  | . Shenandoah,                     | Schuylkill county.     |
| Holloway, Martin L.    | . Delta,                          | York county.           |
| Holmes, George Y.,     | . Claysville,                     | Washington county.     |
| Holmes, Wm. H.,        | . Tyrone,                         | Blair county.          |
| Holt, Joseph C.,       | . 212 Harrison street,            | Pottsville.            |
| Holt, William P.,      | . Williamstown,                   | Dauphin county.        |
| Holthouse, Albert W.,  | . 105 Sheffield street,           | Allegheny.             |
| Holtzhauser, Ludwig,   | . York and Tulip streets,         | Philadelphia.          |
| Honeycutt, J. E.,      | . Beaver Springs,                 | Snyder county.         |
| Hooper, Oliver P.,     | . Kane,                           | McKean county.         |
| Hooven, Robert L.,     | . Fourth and Centre streets,      | East Mauch Chunk.      |
| Hooven, Wilber T.,     | . Fourth and Centre streets,      | East Mauch Chunk.      |
| Hoover, Albert M.,     | . Parker City,                    | Armstrong county.      |
| Hoover, Henry T.,      | . 152 N. Twelfth street,          | Philadelphia.          |
| Hopkins, John A.,      | . Perryopolis,                    | Fayette county.        |
| Horn, Charles T.,      | . Lehighton,                      | Carbon county.         |
| Horn, Charles W.,      | . Slatington,                     | Lehigh county.         |
| Horn, David, Jr.,      | . Bolton House,                   | Harrisburg.            |

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| Horn, Edgar A., . . . .   | Lehighton, . . . . .                    | Carbon county.       |
| Horn, Harry M., . . . .   | 3637 Market street, . . . . .           | Philadelphia.        |
| Horn, H. Y., . . . . .    | Coplay, . . . . .                       | Lehigh county.       |
| Horn, Wilbur F., . . . .  | Carlisle, . . . . .                     | Cumberland county.   |
| Hornberger, Harry O.,     | Hazelwood street, . . . . .             | Pittsburgh.          |
| Horner, James W., . . .   | 125 S. Thirty-seventh street, . . . . . | Philadelphia.        |
| Horton, William F., . .   | Stony Fork, . . . . .                   | Tioga county.        |
| Hosack, William. . . .    | Indiana, . . . . .                      | Indiana county.      |
| Hossler, David A., . . .  | 2801 Penn avenue, . . . . .             | Pittsburgh.          |
| Hostettar, Andrew G., .   | Florin, . . . . .                       | Lancaster county.    |
| Hostetter, Chas. M., . .  | 819 Penn avenue, . . . . .              | Pittsburgh.          |
| Hostetter, John H., . .   | Greencastle, . . . . .                  | Franklin county.     |
| Hotchkiss, Sidney B., .   | Edinboro', . . . . .                    | Erie county.         |
| Hottel, Walter B., . . .  | Kane, . . . . .                         | McKean county.       |
| Houck, Joseph H., . . .   | Pittston, . . . . .                     | Luzerne county.      |
| Houck, Paul W., . . . .   | Fifth and Chestnut streets, . . . . .   | Philadelphia.        |
| Houghton, Fred. W., . .   | Austin, . . . . .                       | Potter county.       |
| Houghton, J. C., . . . .  | 20 W. King street, . . . . .            | Lancaster.           |
| Housekeeper, Arndt K.,    | 1604 N. Twelfth street, . . . . .       | Philadelphia.        |
| Howard, Carrie E., . . .  | 1601 Christian street, . . . . .        | Philadelphia.        |
| Howard, George M., . . .  | 707 N. Tenth street, . . . . .          | Philadelphia.        |
| Howarth, Robert, Jr., .   | 516 Market street, . . . . .            | Chester.             |
| Howarth, William G., .    | 516 Market street, . . . . .            | Chester.             |
| Howd, Fay F., . . . . .   | Wellsboro', . . . . .                   | Tioga county.        |
| Hoyt, Willis H., . . . .  | Custer City, . . . . .                  | McKean county.       |
| Huber, James H., . . . .  | Steelton, . . . . .                     | Dauphin county.      |
| Huber, John M., . . . .   | Gettysburg, . . . . .                   | Adams county.        |
| Huber, Milton, . . . . .  | 5 E. Market square, . . . . .           | Williamsport.        |
| Hubleby, A. A., . . . .   | 36 W. King street, . . . . .            | Lancaster.           |
| Hudson, Alonzo G., . . .  | Safe Harbor, . . . . .                  | Lancaster county.    |
| Hudson, Frank E. E., . .  | Third and Howell streets, . . . . .     | Chester.             |
| Hudson, John B., . . . .  | 611 Hepburn street, . . . . .           | Williamsport.        |
| Hudson, Leonard A., . .   | Sixteenth and Tasker streets, . . . . . | Philadelphia.        |
| Huebner, George W., . .   | 264 Main street, . . . . .              | Johnstown.           |
| Hugg, Willis P., . . . .  | Sayre, . . . . .                        | Bradford county.     |
| Hughes, Frank S., . . .   | Main and Stanbridge streets, . . . . .  | Norristown.          |
| Hughes, Isaac N., . . .   | Canonsburg, . . . . .                   | Washington county.   |
| Hughes, William, . . . .  | 290 Beaver avenue, . . . . .            | Allegheny.           |
| Hulbert, William H., . .  | Polk, . . . . .                         | Venango county.      |
| Huley, John B., . . . .   | New Wilmington, . . . . .               | Lawrence county.     |
| Hull, George W., . . . .  | 23 W. King street, . . . . .            | Lancaster.           |
| Hull, Morris A., . . . .  | 4465 Main street, . . . . .             | Manayunk.            |
| Hulshizer, Martin, . . .  | Doylestown, . . . . .                   | Bucks county.        |
| Humes, Robert D., . . .   | West Newton, . . . . .                  | Westmoreland county. |
| Humma, Henry J., . . . .  | 100 N. Tenth street, . . . . .          | Reading.             |
| Hummel, Alice, . . . . .  | Kratzerville, . . . . .                 | Snyder county.       |
| Hummel, Azima A., . . .   | Kratzerville, . . . . .                 | Snyder county.       |
| Hummell, William, . . .   | 3001 Richmond street, . . . . .         | Philadelphia.        |
| Humphrey, David W., . .   | 902 Cedar avenue, . . . . .             | Scranton.            |
| Humphrey, W. G., . . . .  | Osceola, . . . . .                      | Tioga county.        |
| Humphrey, Wm. J., . . .   | North East, . . . . .                   | Erie county.         |
| Humphreys, Robt. E., . .  | Irwin, . . . . .                        | Westmoreland county. |
| Hunnell, Bird S., . . . . | Tarentum, . . . . .                     | Allegheny county.    |
| Hunt, George E., . . . .  | Fairview, . . . . .                     | Erie county.         |
| Hunt, G. Shoop, . . . .   | Danville, . . . . .                     | Montour county.      |
| Hunter, James, . . . . .  | 746 S. Nineteenth street, . . . . .     | Philadelphia.        |
| Hunter, James E., . . .   | Turtle Creek, . . . . .                 | Allegheny county.    |

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|----------------------------|--------------------------------------|----------------------|
| Hunter, James S., . . .    | 327 Carson street, . . . . .         | Pittsburgh.          |
| Hunter, Samuel W., . .     | 713 S. Fourth street, . . . . .      | Philadelphia.        |
| Hunter, W. A., . . . .     | Mount Union, . . . . .               | Huntingdon county.   |
| Hunter, Wallace M., . .    | 730 State street, . . . . .          | Erie.                |
| Hunterson, Chas. B., . .   | 1828 Frankford avenue, . . . . .     | Philadelphia.        |
| Huntington, Henry N., .    | 1254 Liberty street, . . . . .       | Franklin.            |
| Huntsman, Edwin S., . .    | Hulmeville, . . . . .                | Berks county.        |
| Huntsman, Howard D., .     | Fifth and Poplar streets, . . . .    | Philadelphia.        |
| Hurd, Michael E., . . .    | Hurd, . . . . .                      | Clearfield county.   |
| Hurley, D. G., . . . .     | Altoona, . . . . .                   | Blair county.        |
| Husband, Thos. J., Jr.,    | Third and Spruce streets, . . . .    | Philadelphia.        |
| Huston, Frank, . . . .     | Uniontown, . . . . .                 | Fayette county.      |
| Huston, James, . . . .     | 1755 N. Thirteenth street, . . . .   | Philadelphia.        |
| Huston, James L., . . .    | 901 Ferry street, . . . . .          | Easton.              |
| Hutchings, Otway E., . .   | Rock Dale, . . . . .                 | Delaware county.     |
| Hutchinson, David W., .    | Kennett Square, . . . . .            | Chester county.      |
| Hutton, David S., . . .    | Yohoghany, . . . . .                 | Westmoreland county. |
| Hutton, James C., . . .    | New Castle, . . . . .                | Lawrence county.     |
| Hyatt, Erwin, . . . . .    | Tionesta, . . . . .                  | Forest county.       |
| Hyde, Alfred, . . . . .    | West Middlesex, . . . . .            | Mercer county.       |
| Hyde, James M., . . . .    | West Middlesex, . . . . .            | Mercer county.       |
| Hyde, William W., . . .    | West Middlesex, . . . . .            | Mercer county.       |
| Hyers, Eugene E., . . .    | Galeton, . . . . .                   | Potter county.       |
| Hyland, Henry A., . . .    | Hyndman, . . . . .                   | Bedford county.      |
|                            |                                      |                      |
| Iaeger, Samuel T., . . .   | 412 Minor street, . . . . .          | Reading.             |
| Ihrig, Theodore E., . . .  | 3610 Fifth street, . . . . .         | Pittsburgh.          |
| Infield, Henry N., . . .   | West Middlesex, . . . . .            | Mercer county.       |
| Infield, Thomas H., . . .  | Sandy Lake, . . . . .                | Mercer county.       |
| Ingham George T., . . .    | Sugar Run, . . . . .                 | Bradford county.     |
| Ingram, Theodore E., . .   | 2951 Poplar street, . . . . .        | Philadelphia.        |
| Ink, Samuel W., . . . .    | Frankstown, . . . . .                | Pittsburgh.          |
| Innes John C., . . . . .   | 1311 Eleventh avenue, . . . . .      | Altoona.             |
| Innes, Wilson J., . . . .  | 1311 Eleventh avenue, . . . . .      | Altoona.             |
| Iobst, Frederick J., . . . | Emaus, . . . . .                     | Lehigh county.       |
| Irvine, Charles C., . . .  | 319 State street, . . . . .          | Sharon.              |
| Irvine, Reed, . . . . .    | 1020 Race street, . . . . .          | Philadelphia.        |
| Irving, Robert C., . . .   | Ogdensburg, . . . . .                | Tioga county.        |
| Irwin, John F., . . . .    | Clearfield, . . . . .                | Clearfield county.   |
| Irwin, Joseph F., . . . .  | Shippensburg, . . . . .              | Clarion county.      |
| Irwin, Joseph R., . . . .  | Curwensville, . . . . .              | Clearfield county.   |
| Irwin, William H., . . .   | Altoona, . . . . .                   | Blair county.        |
| Isard, George W., . . . .  | 349 Wharton street, . . . . .        | Philadelphia.        |
| Ischler, George W., . . .  | Front and Dauphin streets, . . . .   | Philadelphia.        |
| Israel, Julius, . . . . .  | Eleventh and Poplar streets, . . . . | Philadelphia.        |
|                            |                                      |                      |
| Jackson, Andrew, . . . .   | 400 Reily street, . . . . .          | Harrisburg.          |
| Jackson, Charles P., . . . | 1634 N. Fifteenth street, . . . . .  | Philadelphia.        |
| Jackson, George N., . . .  | Seventh and Arch streets, . . . . .  | Philadelphia.        |
| Jackson, J. Benson, . . .  | New Buffalo, . . . . .               | Perry county.        |
| Jackson, John W., . . . .  | Blossburg, . . . . .                 | Tioga county.        |
| Jackson, William H., . .   | New Buffalo, . . . . .               | Perry county.        |
| Jacob, Charles P., . . . . | 1027 Arch street, . . . . .          | Philadelphia.        |
| Jacobs, John P., . . . .   | 1011 Vine street, . . . . .          | Philadelphia.        |
| Jacobs, Theodore, . . . .  | 213 East Main street, . . . . .      | Norristown.          |
| Jacobs, Thomas J., . . .   | Summerfield, . . . . .               | Somerset county.     |
| Jacobson, Frank E., . . .  | Macungie, . . . . .                  | Lehigh county.       |



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| Jacoby, Cyrus, . . . .      | South Bethlehem, . . . . .                | Northampton county.  |
| Jacoby, Francis, Jr., . .   | 932 Chestnut street, . . . . .            | Philadelphia.        |
| Jacoby, John W., . . .      | Second and Chew streets, . . . . .        | Allentown.           |
| Jacoby Reuben L., . . .     | 1602 Pine street, . . . . .               | Philadelphia         |
| Jadwin, Cornelius C., . .   | Honesdale, . . . . .                      | Wayne county.        |
| Jadwin, Henry B., . . .     | Park and Main streets, . . . . .          | Carbondale.          |
| Jadwin, John S., . . .      | Park and Main streets, . . . . .          | Carbondale.          |
| James, Edmund, . . . .      | Ebensburg, . . . . .                      | Cambria county.      |
| James, George R., . . .     | Orbisonia, . . . . .                      | Huntingdon county.   |
| James, G. W. C., . . . .    | Orbisonia, . . . . .                      | Huntingdon county.   |
| James, Henry H., . . . .    | Wyoming, . . . . .                        | Luzerne county.      |
| James, J. W., . . . . .     | Brady's Bend, . . . . .                   | Armstrong county.    |
| James, William D., . . .    | Brady's Bend, . . . . .                   | Armstrong county.    |
| Jameson, David, Jr., . .    | 801 S. Third street, . . . . .            | Philadelphia.        |
| Jamison, John C., . . .     | Mutual, . . . . .                         | Westmoreland county. |
| Janswick, J. J., . . . .    | Forest City, . . . . .                    | Susquehanna county.  |
| Javens, Thomas H., . . .    | Rochester, . . . . .                      | Beaver county.       |
| Jeffries, James A., . . .   | 5701 Germantown avenue, . . . . .         | Philadelphia.        |
| Jenkins, E. P., . . . .     | Coal Dale, . . . . .                      | Bedford county.      |
| Jenkins, George W., . . .   | 101 S. Main avenue, . . . . .             | Scranton.            |
| Jenkins, John L., . . .     | 1234 Academy street, . . . . .            | Scranton.            |
| Jenkins, W. W., . . . .     | Market street and Wayne avenue, . . . . . | Scranton.            |
| Jenks, William E., . . .    | 461 Marshall street, . . . . .            | Philadelphia.        |
| Jenks, William L., . . .    | 160 N. Third street, . . . . .            | Philadelphia.        |
| Jessop, Charles J., . . .   | Kittanning, . . . . .                     | Armstrong county.    |
| Jessop, Samuel A. S., . .   | Kittanning, . . . . .                     | Armstrong county.    |
| Jewell, Thomas H., . . .    | Pulaski, . . . . .                        | Lawrence county.     |
| John, Hilbert B., . . . .   | 242 Chestnut street, . . . . .            | Philadelphia.        |
| John, J. Frank, . . . . .   | Waynesburg, . . . . .                     | Greene county.       |
| Johnson, Benj. F., . . .    | 301 E. Girard avenue, . . . . .           | Philadelphia.        |
| Johnson, Elmer E., . . .    | Lost Creek, . . . . .                     | Schuylkill county.   |
| Johnson, George H., . . .   | 2202 Ridge avenue, . . . . .              | Philadelphia.        |
| Johnson, Gustave A., . .    | Bellefonte, . . . . .                     | Centre county.       |
| Johnson, Samuel C., . . .   | Blooming Valley, . . . . .                | Crawford county.     |
| Johnson, Wm. W., . . . .    | 326 W. Second street, . . . . .           | Chester.             |
| Johnson, W. M., . . . .     | Venetia, . . . . .                        | Washington county.   |
| Johnson, Wm. A., . . . .    | 229 Vine street, . . . . .                | Philadelphia.        |
| Johnston, A. R., . . . .    | New Bloomfield, . . . . .                 | Perry county.        |
| Johnston, Cyrus H., . . .   | New Milford, . . . . .                    | Susquehanna county.  |
| Johnston, Cyrus S., . . .   | Harford, . . . . .                        | Susquehanna county.  |
| Johnston, Simon, . . . .    | 214 Smithfield street, . . . . .          | Pittsburgh.          |
| Jolly, George L., . . . .   | Orangeville, . . . . .                    | Columbia county.     |
| Jones, A. Arthur, . . . .   | 1804 Columbia avenue, . . . . .           | Philadelphia.        |
| Jones, Arthur E., . . . .   | 112 W. Market street, . . . . .           | Scranton.            |
| Jones, Charles F., . . . .  | Stevensville, . . . . .                   | Bradford county      |
| Jones, Chas. Pierson, . . . | 1560 Dickson avenue, . . . . .            | Scranton.            |
| Jones, Daniel S., . . . .   | 1201 Spruce street, . . . . .             | Philadelphia.        |
| Jones, David M., . . . .    | 427 S. Washington avenue, . . . . .       | Scranton.            |
| Jones, Edward C., . . . .   | 1436 Market street, . . . . .             | Philadelphia.        |
| Jones, Frederick H., . . .  | Laceyville, . . . . .                     | Wyoming county       |
| Jones, George D., . . . .   | 768 Passyunk avenue, . . . . .            | Philadelphia.        |
| Jones, Henry E., . . . .    | 2441 Brown street, . . . . .              | Philadelphia.        |
| Jones, James Miles, . . . . | 906 Penn street, . . . . .                | Reading.             |
| Jones, John Hughes, . . .   | 430 Fifth avenue, . . . . .               | Pittsburgh.          |
| Jones, John R., . . . . .   | Lansford, . . . . .                       | Carbon county.       |
| Jones, Joseph H., . . . .   | 320 Lackawanna avenue, . . . . .          | Scranton.            |
| Jones, Lysander M., . . .   | 320 Lackawanna avenue, . . . . .          | Scranton.            |

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| Jones, Nathan, . . . . .         | 430 Fifth avenue, . . . . .             | Pittsburgh.          |
| Jones, Samuel S., . . . . .      | 54 Market street, . . . . .             | Wilkes-Barre.        |
| Jones, Thomas Howell, . . . . .  | 130 S. Main avenue, . . . . .           | Scranton.            |
| Jones, William B., . . . . .     | 1336 S. Eighth street, . . . . .        | Philadelphia.        |
| Jones, William M., . . . . .     | Midway, . . . . .                       | Washington county.   |
| Jones, William R., . . . . .     | Eleventh and Diamond streets, . . . . . | Philadelphia.        |
| Jones, William S., . . . . .     | 2508 Carson street, . . . . .           | Pittsburgh.          |
| Jordan, Frank W., . . . . .      | Bedford, . . . . .                      | Bedford county.      |
| Jordan, Frank W., . . . . .      | Tacony, . . . . .                       | Philadelphia.        |
| Jorden, A. S., . . . . .         | Columbia, . . . . .                     | Lancaster county.    |
| Jordy, George H., . . . . .      | York, . . . . .                         | York county.         |
| Joslin, Henry H., . . . . .      | Ulster, . . . . .                       | Bradford county.     |
| Jost, William W., . . . . .      | 1318 Poplar street, . . . . .           | Philadelphia.        |
| Judd, James F., . . . . .        | Harrowgate, . . . . .                   | Philadelphia.        |
| Judge, John A., . . . . .        | 2814 Edgemont street, . . . . .         | Philadelphia.        |
| Jump, Harvey D., . . . . .       | Sayre, . . . . .                        | Bradford county.     |
| Jungman, Emil, . . . . .         | 220 Vine street, . . . . .              | Philadelphia.        |
|                                  |                                         |                      |
| Keampfer, Emil F., . . . . .     | Fifth and Lombard streets, . . . . .    | Philadelphia.        |
| Kaercher, Albert J., . . . . .   | 59 Federal street, . . . . .            | Allegheny.           |
| Kahle, D. B., . . . . .          | Monroe, . . . . .                       | Clarion county.      |
| Kahnweiler, Levi, . . . . .      | 447 N. Fourth street, . . . . .         | Philadelphia.        |
| Kalmbach, Henry G., . . . . .    | Mervine and Norris streets, . . . . .   | Philadelphia.        |
| Kamerer, George F., . . . . .    | Greenville, . . . . .                   | Mercer county.       |
| Kamerley, Christ E., . . . . .   | 501 Carpenter street, . . . . .         | Philadelphia.        |
| Kane, Frank A., . . . . .        | Capoosa, . . . . .                      | Lackawanna county.   |
| Kane, John S., . . . . .         | Worth, . . . . .                        | Mercer county.       |
| Kanther, Harry B., . . . . .     | 800 Walnut street, . . . . .            | Philadelphia.        |
| Karr, William P., . . . . .      | 72 Main street, . . . . .               | Wellsboro'.          |
| Karsner, Charles W., . . . . .   | 1541 Ellsworth street, . . . . .        | Philadelphia.        |
| Kasson, Myron, . . . . .         | Montrose, . . . . .                     | Susquehanna county.  |
| Kasten, W. J., . . . . .         | Boiling Springs, . . . . .              | Cumberland county.   |
| Katzenmeyer, H. A., . . . . .    | 2329 Penn avenue, . . . . .             | Pittsburgh.          |
| Kauffeld, Charles P., . . . . .  | 393 Fifth avenue, . . . . .             | Pittsburgh.          |
| Kauffman, H. B., . . . . .       | Newburg, . . . . .                      | Cumberland county.   |
| Kauffman, John R., . . . . .     | 56 N. Queen street, . . . . .           | Lancaster.           |
| Kauffman, Walter L., . . . . .   | Paradise, . . . . .                     | Lancaster county.    |
| Kaufman, Charles, . . . . .      | Mill and Centre streets, . . . . .      | Danville.            |
| Kautz, T. Clayton, . . . . .     | Selinsgrove, . . . . .                  | Snyder county.       |
| Kaye, John, . . . . .            | 2545 Brown street, . . . . .            | Philadelphia.        |
| Keale, Charles F., . . . . .     | 586 Wyeth avenue, . . . . .             | Brooklyn, N. Y.      |
| Kearns, James D., . . . . .      | 161 Fifth avenue, . . . . .             | Pittsburgh.          |
| Keck, Frank P., . . . . .        | Laury's Station, . . . . .              | Lehigh county.       |
| Keck, George W., . . . . .       | Kecksburg, . . . . .                    | Westmoreland county. |
| Keck, Harry E., . . . . .        | Kecksburg, . . . . .                    | Westmoreland county. |
| Keck, J. M., . . . . .           | Kecksburg, . . . . .                    | Westmoreland county. |
| Keck, W. H., . . . . .           | 277 Federal street, . . . . .           | Allegheny.           |
| Keefe, Charles D., . . . . .     | Chambersburg, . . . . .                 | Franklin county.     |
| Keegan, Harry H., . . . . .      | 805 N. Forty-fifth street, . . . . .    | Philadelphia.        |
| Keeler, Joseph P., . . . . .     | 650 Wharton street, . . . . .           | Philadelphia.        |
| Keelor, Charles E., . . . . .    | 3443 Walnut street, . . . . .           | Philadelphia.        |
| Keelor, Reinard S., . . . . .    | Phoenixville, . . . . .                 | Chester county.      |
| Keeney, Caleb R., . . . . .      | 1601 Arch street, . . . . .             | Philadelphia.        |
| Keeney, William R., . . . . .    | 1601 Arch street, . . . . .             | Philadelphia.        |
| Keet, Frank S., . . . . .        | 433 Market street, . . . . .            | Harrisburg.          |
| Keifer, Mrs. Susan H., . . . . . | 107 Northampton street, . . . . .       | Easton.              |
| Keil, John J., . . . . .         | 615 Main street, . . . . .              | Sharpsburg.          |

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| Keim, Asher D., . . . . .        | 71 Broad street, . . . . .             | Bethlehem.               |
| Keir, William G., . . . . .      | 1511 S. Fourth street, . . . . .       | Philadelphia.            |
| Kelchner, Charles F., . . . . .  | Broad and Centre streets, . . . . .    | Bethlehem.               |
| Kelenberger, F. J., . . . . .    | 108 Fulton street, . . . . .           | Pittsburgh.              |
| Keller, Alexander, . . . . .     | 116 N. Second street, . . . . .        | Philadelphia.            |
| Keller, Christian K., . . . . .  | 405 Market street, . . . . .           | Harrisburg.              |
| Keller, Cordelia M., . . . . .   | Elizabethtown, . . . . .               | Lancaster county.        |
| Keller, Croll, . . . . .         | 405 Market street, . . . . .           | Harrisburg.              |
| Keller, Edgar E., . . . . .      | 80 Sixth avenue, . . . . .             | Pittsburgh.              |
| Keller, Frederick R., . . . . .  | Pottstown, . . . . .                   | Montgomery county.       |
| Keller, John W., . . . . .       | Ashley, . . . . .                      | Luzerne county.          |
| Keller, William, . . . . .       | 319 Market street, . . . . .           | Williamsport.            |
| Kelley, M. L., . . . . .         | McKeesport, . . . . .                  | Allegheny county.        |
| Kelly, Bernard A., . . . . .     | Carbondale, . . . . .                  | Lackawanna county.       |
| Kelly, Cassius H., . . . . .     | East Brady, . . . . .                  | Clarion county.          |
| Kelly, Clark M., . . . . .       | Pleasant Unity, . . . . .              | Westmoreland county.     |
| Kelly, Francis B., . . . . .     | 80 Sixth avenue, . . . . .             | Pittsburgh.              |
| Kelly, Harry E., . . . . .       | Parker City, . . . . .                 | Armstrong county.        |
| Kelly, James H., . . . . .       | Pleasant Unity, . . . . .              | Westmoreland county.     |
| Kelly, Leonard, . . . . .        | Olyphant, . . . . .                    | Lackawanna county.       |
| Kelly, Nancy H., . . . . .       | Pleasant Unity, . . . . .              | Westmoreland county.     |
| Kelly, Olive L., . . . . .       | Olyphant, . . . . .                    | Lackawanna county.       |
| Kelly, Patrick M., . . . . .     | 1131 S. Twentieth street, . . . . .    | Philadelphia.            |
| Kelly, Robert J., . . . . .      | 1215 Market street, . . . . .          | Philadelphia.            |
| Kelly, Walla L., . . . . .       | Waterford, . . . . .                   | Erie county.             |
| Kelly, William C., . . . . .     | South Chester, . . . . .               | Delaware county.         |
| Kemble, Charles, . . . . .       | Tidioute, . . . . .                    | Warren county.           |
| Kemble, Grant W., . . . . .      | West Hickory, . . . . .                | Forest county.           |
| Kemble, William W., . . . . .    | Tidioute, . . . . .                    | Warren county.           |
| Kemmerer, Newton H., . . . . .   | Emaus, . . . . .                       | Lehigh county.           |
| Kemp, Joshua S., . . . . .       | Littlestown, . . . . .                 | Adams county.            |
| Kempsmith, Paul, . . . . .       | Bethlehem, . . . . .                   | Northampton county.      |
| Kenah, Roland L., . . . . .      | New Brighton, . . . . .                | Beaver county.           |
| Kendall, Perry G., . . . . .     | Bear Lake, . . . . .                   | Warren county.           |
| Kendig, Allen J., . . . . .      | 2226 Wallace street, . . . . .         | Philadelphia.            |
| Kennard, John B., . . . . .      | Clearfield, . . . . .                  | Clearfield county.       |
| Kennedy, Albert D., . . . . .    | Eleventh and South streets, . . . . .  | Philadelphia.            |
| Kennedy, Alexander, . . . . .    | Eleventh st. and Girard av., . . . . . | Philadelphia.            |
| Kennedy, George W., . . . . .    | 103 N. Centre street, . . . . .        | Pottsville.              |
| Kennedy, James A., . . . . .     | Tarentum, . . . . .                    | Allegheny county.        |
| Kennedy, William, . . . . .      | 1337 S. Sixteenth street, . . . . .    | Philadelphia.            |
| Kennedy, William H., . . . . .   | 306 Broad street, . . . . .            | Harrisburg.              |
| Kennedy, William P., . . . . .   | Dickson City, . . . . .                | Lackawanna county.       |
| Kennedy, Joseph W., . . . . .    | 212 Market street, . . . . .           | Pittsburgh.              |
| Keogh, Francis J., . . . . .     | 601 W. Dauphin street, . . . . .       | Philadelphia.            |
| Kepler, David C., . . . . .      | Mount Pleasant Mills, . . . . .        | Snyder county.           |
| Keplinger, William C., . . . . . | Shepherdstown, . . . . .               | Jefferson county, W. Va. |
| Kepner, John C., . . . . .       | Chester, . . . . .                     | Delaware county.         |
| Kerlin, John H., . . . . .       | Linwood, . . . . .                     | Delaware county.         |
| Kern, Franklin, . . . . .        | Slatington, . . . . .                  | Lehigh county.           |
| Kern, James B., . . . . .        | 2055 Vine street, . . . . .            | Philadelphia.            |
| Kern, Palmer M., . . . . .       | Bath, . . . . .                        | Northampton county.      |
| Kerr, Frank C., . . . . .        | Stroudsburg, . . . . .                 | Monroe county.           |
| Kerr, James, Jr., . . . . .      | 402 Smithfield street, . . . . .       | Pittsburgh.              |
| Kerr, John H., . . . . .         | 2577 Amber street, . . . . .           | Philadelphia.            |
| Kerr, John W., . . . . .         | Rimersburg, . . . . .                  | Clarion county.          |
| Kerr, Joseph M., . . . . .       | Stroudsburg, . . . . .                 | Monroe county.           |

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| Kerr, Milton C., . . . .     | Blairsville, . . . . .                | Indiana county.        |
| Kerr, Sterling, Jr., . . .   | Eighth and Diamond streets, . . .     | Philadelphia.          |
| Kerr, William D., . . .      | Twenty-second and Ellsworth sts., . . | Philadelphia.          |
| Kessler, George W., . . .    | Altoona, . . . . .                    | Blair county.          |
| Kester, Elias P., . . . .    | Dushore, . . . . .                    | Sullivan county.       |
| Ketring, David T., . . .     | Williamsburg, . . . . .               | Blair county.          |
| Keys, John C., . . . . .     | 1201 Pine street, . . . . .           | Philadelphia.          |
| Kieffer, Charles C., . . .   | Carlisle, . . . . .                   | Cumberland county.     |
| Kieffer, Otto D., . . . .    | 309 Dugan street, . . . . .           | Philadelphia.          |
| Kiley, John H., . . . . .    | Morris Run, . . . . .                 | Tioga county.          |
| Kilian, Charles T., . . .    | 401 Northampton street, . . . . .     | Easton.                |
| Kille, George H., . . . .    | 1759 N. Tenth street, . . . . .       | Philadelphia.          |
| Killough, Samuel M., . .     | Hummelstown, . . . . .                | Dauphin county.        |
| Kilgus, John F., . . . . .   | 1903 Arch street, . . . . .           | Philadelphia.          |
| Kilgus, William M., . . .    | 1812 N. Twenty-seventh street, . . .  | Philadelphia.          |
| Kimble, Willis S., . . . .   | Waymart, . . . . .                    | Wayne county.          |
| Kinard, George W., . . . .   | Leacock, . . . . .                    | Lancaster county.      |
| Kindig, Isaiah H. S., . .    | 233 N. Second street, . . . . .       | Philadelphia.          |
| Kindig, Rudolph, . . . .     | 2551 N. Broad street, . . . . .       | Philadelphia.          |
| King, Charles E., . . . . .  | 2401 Master street, . . . . .         | Philadelphia.          |
| King, Everett L., . . . . .  | 1900 Green street, . . . . .          | Philadelphia.          |
| King, James C., . . . . .    | Reynoldsville, . . . . .              | Jefferson county.      |
| King, Maria, . . . . .       | Grove City, . . . . .                 | Mercer county.         |
| King, Thomas C., . . . .     | Penn's Station, . . . . .             | Westmoreland county.   |
| Kinnear, William A., . . .   | Second and Liberty streets, . . . .   | Warren.                |
| Kinney, John T., . . . . .   | Braddock, . . . . .                   | Allegheny county.      |
| Kinsel, Grant A., . . . .    | 624 N. Twelfth street, . . . . .      | Philadelphia.          |
| Kirby, Charles P., . . . .   | 3400 Spruce street, . . . . .         | Philadelphia.          |
| Kirby, Clarence T., . . . .  | Towanda, . . . . .                    | Bradford county.       |
| Kirk, Grant E., . . . . .    | 236 S. Ninth street, . . . . .        | Philadelphia.          |
| Kirkendau, C. F., . . . .    | 701 Penn avenue, . . . . .            | Pittsburgh.            |
| Kirlin, P. P. D., . . . . .  | Shenandoah, . . . . .                 | Schuylkill county.     |
| Kirwin, Martin F., . . . .   | 145 E. Market street, . . . . .       | Wilkes-Barre.          |
| Kiskadden, William J., . .   | 103 Bridge street, . . . . .          | Etna.                  |
| Kisner, Charles N., . . . .  | Berwick, . . . . .                    | Columbia county.       |
| Kitzmiller, Frank K., . .    | 1143 Derry street, . . . . .          | Harrisburg.            |
| Klapp, Elmer A., . . . . .   | Fourteenth and W. Fairview sts., . .  | Lock Haven.            |
| Klapp, William H., . . . .   | 400 Main street, . . . . .            | Lock Haven.            |
| Kleckner, James, . . . . .   | Mifflinburg, . . . . .                | Union county.          |
| Klein, Christopher A., . . . | Bloomsburg, . . . . .                 | Columbia county.       |
| Kleim, H. F., . . . . .      | Mount Carmel, . . . . .               | Northumberland county. |
| Klein, George B., . . . . .  | Syner, . . . . .                      | Lebanon county.        |
| Klein, John H., . . . . .    | Littlestown, . . . . .                | Adams county.          |
| Kleinert, George J., . . .   | 202 N. Centre street, . . . . .       | Pottsville.            |
| Kline, John, . . . . .       | 112 N. Centre street, . . . . .       | Pottsville.            |
| Kline, William O., . . . .   | Rice's Landing, . . . . .             | Greene county.         |
| Kline, Willoughby C., . .    | Myerstown, . . . . .                  | Lebanon county.        |
| Klingensmith, I. P., . . .   | Blairsville, . . . . .                | Indiana county.        |
| Klingler, John H., . . . .   | 1941 Spring Garden street, . . . . .  | Philadelphia.          |
| Klopp, Eli L., . . . . .     | 334 Penn street, . . . . .            | Reading.               |
| Klopp, Peter P., . . . . .   | Nineteenth and Wharton streets, . .   | Philadelphia.          |
| Kloppenstone, J. A., . . .   | Tamaqua, . . . . .                    | Schuylkill county.     |
| Klump, Charles C., . . . .   | 537 Hamilton street, . . . . .        | Allentown.             |
| Klump, George L., . . . .    | 537 Hamilton street, . . . . .        | Allentown.             |
| Klump, Mary, . . . . .       | 537 Hamilton street, . . . . .        | Allentown.             |
| Knapp, Avery, . . . . .      | West Pittston, . . . . .              | Luzerne county.        |
| Knapp, Philip R., . . . .    | 315 Smithfield street, . . . . .      | Pittsburgh.            |



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| Knaus, Frederick J.,  | . 773 S. Twelfth street,                  | Philadelphia.          |
| Knerr, L. J.,         | . 712 Penn street,                        | Reading.               |
| Kneeshaw, Wm. W.,     | . Wissahickon,                            | Philadelphia.          |
| Knight, Ambrose S.,   | . North Clarendon,                        | Warren county.         |
| Knight, Cyrus E.,     | . . . . . Derrick City,                   | McKean county.         |
| Knight, Elmer E.,     | . . . . . Mansfield Valley,               | Allegheny county.      |
| Knight, William E.,   | . 235 S. Tenth street,                    | Philadelphia.          |
| Knipe, Francis M.,    | . 2246 Ridge avenue,                      | Philadelphia.          |
| Knisell, Sidney L.,   | . 528 Arch street,                        | Philadelphia.          |
| Knoepfel, William H., | . 1019 N. Irving avenue,                  | Scranton.              |
| Knorr, John K., Jr.,  | . Girard and Susquehanna avenues,         | Philadelphia.          |
| Knorr, Victor C.,     | . . . . . Braddock,                       | Allegheny county.      |
| Knouse, Jacob H.,     | . 426 Market street,                      | Harrisburg.            |
| Knowles, George A.,   | . 2211 Federal street,                    | Philadelphia.          |
| Koch, Arnold,         | . . . . . 62 Washington avenue,           | Pittsburgh.            |
| Koch, Charles H.,     | . . . . . Carlisle,                       | Cumberland county.     |
| Koch, Eugene C. H.,   | . 316 York avenue,                        | Philadelphia.          |
| Koch, Julius A.,      | . . . . . 1203 Carson street,             | Pittsburgh.            |
| Koch, Louis,          | . . . . . 316 York avenue,                | Philadelphia.          |
| Koempel, Charles,     | . 627 Pittston avenue,                    | Scranton.              |
| Koenig, William M.,   | . 134 N. Ninth street,                    | Reading.               |
| Kohlerman, J. W.,     | . Seventh and Morris streets,             | Philadelphia.          |
| Kold, Isadore,        | . . . . . 4050 Germantown avenue,         | Philadelphia.          |
| Kolp, Jacob L.,       | . . . . . 1000 Buttonwood street,         | Philadelphia.          |
| Kooker, George W.,    | . Rittenhouse and Knox streets,           | Germantown.            |
| Kooker, Jacob G.,     | . . . . . 8 Main street,                  | Norristown.            |
| Kooker, John L.,      | . . . . . Armat street and Willow avenue, | Germantown.            |
| Koons, William H.,    | . 121 S. Thirty-sixth street,             | Philadelphia.          |
| Kopp, Charles R.,     | . . . . . 400 W. Market street,           | York.                  |
| Kornacher, William,   | . 724 Pittston avenue,                    | Scranton.              |
| Korr, William P.,     | . . . . . Wellsboro',                     | Tioga county.          |
| Krailing, Adolph H.,  | . Fifth street and Wylie avenue,          | Pittsburgh.            |
| Krall, George H.,     | . 4927 Lancaster avenue,                  | Philadelphia.          |
| Kramer, Charles F.,   | . Third and Broad streets,                | Harrisburg.            |
| Kramer, Homer D.,     | . McKee's Rocks,                          | Allegheny county.      |
| Kramer, Ira D. W.,    | . 461 Richmond street,                    | Philadelphia.          |
| Kratz, Annetta,       | . . . . . Plumsteadville,                 | Bucks county.          |
| Kratz, Mahlon,        | . . . . . 4552 Germantown avenue,         | Philadelphia.          |
| Kraus, Otto,          | . . . . . 1536 N. Fourth street,          | Philadelphia.          |
| Krause, John H.,      | . . . . . 2533 Brown street,              | Philadelphia.          |
| Krauser, Daniel M.,   | . Milton,                                 | Northumberland county. |
| Krauser, Elias,       | . . . . . Milton,                         | Northumberland county. |
| Krauss, Gustave A.,   | . 2435 W. College avenue,                 | Philadelphia.          |
| Krebs, A. Bryan,      | . . . . . Hillsdale,                      | Indiana county.        |
| Krebs, David T.,      | . . . . . Mount Carmel,                   | Northumberland county. |
| Krebs, Harry J.,      | . . . . . 111 W. Centre street,           | Mahanoy City.          |
| Kredel, George,       | . . . . . 82 Haynes street,               | Conemaugh.             |
| Krehan, Frank,        | . . . . . 23 Wright alley,                | Pittsburgh.            |
| Kreitzer, Michael C., | . 1536 N. Fourth street,                  | Philadelphia.          |
| Krell, Frederick B.,  | . 743 S. Third street,                    | Philadelphia.          |
| Kremer, Walter H.,    | . 5102 Germantown avenue,                 | Germantown.            |
| Kressler, George D.,  | . Bethlehem,                              | Northampton county.    |
| Krewon, William E.,   | . 1829 N. Eighth street,                  | Philadelphia.          |
| Krider, James D.,     | . 1400 Walnut street,                     | Philadelphia.          |
| Kroh, Harry K.,       | . . . . . Conshohocken,                   | Montgomery county.     |
| Krosskop, William B., | . Oil City,                               | Venango county.        |
| Krum, Daniel E.,      | . . . . . Philipsburg,                    | Centre county.         |

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| Krum, Thomas E., . . .        | 223 N. Sixth street, . . . . .      | Reading.               |
| Kuehn, Gustave A. A., . . .   | 159 E. Market street, . . . . .     | Wilkes-Barre.          |
| Kuhn, Arthur J., . . .        | Homestead, . . . . .                | Allegheny county.      |
| Kuhn, Charles L., . . .       | Mount Pleasant, . . . . .           | Westmoreland county.   |
| Kuhn, Gustave O., Jr., . . .  | 315 W. York street, . . . . .       | Philadelphia.          |
| Kuhn, Milton S., . . .        | Mount Pleasant, . . . . .           | Westmoreland county.   |
| Kuhn, Paul, . . . . .         | 177 Second avenue, . . . . .        | Pittsburgh.            |
| Kulp, William A., . . .       | Lock Haven, . . . . .               | Clinton county.        |
| Kunkel, William E., . . .     | 1800 Chestnut street, . . . . .     | Philadelphia.          |
| Kunkle, William E., . . .     | Saladasburg, . . . . .              | Lycoming county,       |
| Kunkle, William H., . . .     | Williamsport, . . . . .             | Lycoming county.       |
| Kuntz, John R., . . .         | Washington, . . . . .               | Washington county.     |
| Kurtz, Adolph C., . . .       | Federal and Ohio streets, . . . . . | Allegheny.             |
| Kusenber, Louis C., . . .     | 1607 Ridge avenue, . . . . .        | Philadelphia.          |
| Kutscher, George W., . . .    | 295 Spring Garden avenue, . . . . . | Allegheny.             |
| Kutzner, John G., . . .       | 43 S. Main street, . . . . .        | Wilkes-Barre.          |
| Kyle, Elmer B., . . .         | 2837 Kensington avenue, . . . . .   | Philadelphia.          |
|                               |                                     |                        |
| Lacey, William H., . . .      | 1900 Green street, . . . . .        | Philadelphia.          |
| Lacey, William R., . . .      | 81 Federal street, . . . . .        | Allegheny.             |
| Laciar, Joseph, . . .         | Mauch Chunk, . . . . .              | Carbon county.         |
| Lackey, Richard H., . . .     | 1772 Frankford avenue, . . . . .    | Philadelphia.          |
| Lafean, Albert H., . . .      | 4½ W. Market street, . . . . .      | York.                  |
| Lafean, Edward C., . . .      | 4½ W. Market street, . . . . .      | York.                  |
| Laferty, Jacob E., . . .      | 6001 Vine street, . . . . .         | Philadelphia.          |
| Laffer, Philip E., . . .      | 1096 Water street, . . . . .        | Meadville.             |
| Lafferty, Archie I., . . .    | Sharon, . . . . .                   | Mercer county.         |
| Lafferty, Charles D., . . .   | 528 Arch street, . . . . .          | Philadelphia.          |
| Lafferty, J. H., . . .        | New Florence, . . . . .             | Westmoreland county.   |
| Lafferty, John H., . . .      | Sharon, . . . . .                   | Mercer county.         |
| Lake, Erastus E., . . .       | Shamokin, . . . . .                 | Northumberland county. |
| Lamb, D. Hadley, . . .        | Emporium, . . . . .                 | Cameron county.        |
| Lamb, F. D., . . . . .        | Hallstead, . . . . .                | Susquehanna county.    |
| Lambert, Charles H., . . .    | 176 Bridge street, . . . . .        | Bridesburg.            |
| Lambert, Louis A., . . .      | Elizabeth, . . . . .                | Allegheny county.      |
| Lammer, Francis J., . . .     | 2043 Chestnut street, . . . . .     | Philadelphia.          |
| Landis, Frank Theo., . . .    | Womelsdorf, . . . . .               | Berks county.          |
| Landis, Isaac R., . . .       | 3522 Germantown avenue, . . . . .   | Philadelphia.          |
| Landis, Joseph B., . . .      | Halifax, . . . . .                  | Dauphin county.        |
| Landis, Josiah, . . .         | Manheim, . . . . .                  | Lancaster county.      |
| Landis, J. William, . . .     | 305 Cherry street, . . . . .        | Philadelphia.          |
| Lane, Daniel F., . . .        | 4300 Butler street, . . . . .       | Pittsburgh.            |
| Lane, Homer K., . . .         | Ulysses, . . . . .                  | Potter county.         |
| Lang, George P., . . .        | 148 Madison avenue, . . . . .       | Allegheny.             |
| Lang, Henry, . . . . .        | Belle Vernon, . . . . .             | Fayette county.        |
| Lange, Kennedy F., . . .      | 3601 Butler street, . . . . .       | Pittsburgh.            |
| Lantz, William H., . . .      | 1634 Columbia avenue, . . . . .     | Philadelphia.          |
| Larry, Samuel, . . .          | 86 Lacock street, . . . . .         | Allegheny.             |
| Lascheid, Peter W., . . .     | 2600 Josephine street, . . . . .    | Pittsburgh.            |
| Lashelle, Charles L., . . .   | Rockdale, . . . . .                 | Delaware county.       |
| Latshaw, Elliott S., . . .    | Martinsburg, . . . . .              | Blair county.          |
| Laubach, Stephen, . . .       | Ferry and Walnut streets, . . . . . | Easton.                |
| Laubach, Wm. H., Jr., . . .   | 196 E. Market street, . . . . .     | Wilkes-Barre.          |
| Laufman, Albert, . . .        | Wilkinsburg, . . . . .              | Allegheny county.      |
| Laurent, Augustus G., . . .   | 743 S. Third street, . . . . .      | Philadelphia.          |
| Lautenbacher, Irvin L., . . . | Schuylkill Haven, . . . . .         | Schuylkill county.     |
| Lavery, Charles K., . . .     | 35 S. Second street, . . . . .      | Harrisburg.            |

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| Lavery, Eugene C.,     | Middletown,                     | Dauphin county.        |
| Lavery, Theo. C.,      | Middletown,                     | Dauphin county.        |
| Law, William,          | Archbald,                       | Lackawanna county.     |
| Lawall, Charles E.,    | 413 Front street,               | Catasauqua.            |
| Lawall, Cyrus,         | 437 Northampton street,         | Easton.                |
| Lawall, Edgar J.,      | 413 Front Street,               | Catasauqua.            |
| Lawall, John J.,       | Bloomsburg,                     | Columbia county.       |
| Lawall, Walter S.,     | 437 Northampton street,         | Easton.                |
| Lawrence, Henry R.,    | 239 S. Eleventh street,         | Philadelphia.          |
| Lawrence, Mary L.,     | Port Carbon,                    | Schuylkill county.     |
| Lawson, Alexander R.,  | 613 N. Fourth street,           | Philadelphia.          |
| Lawson, George S.,     | 613 N. Fourth street,           | Philadelphia.          |
| LeBar, Amzi,           | Stroudsburg,                    | Monroe county.         |
| Leber, Jacob G.,       | York,                           | York county.           |
| Leberknight, F. B.,    | Newburg,                        | Cumberland county.     |
| Lee, William E.,       | 2327 Brown street,              | Philadelphia.          |
| Leedom, Charles,       | 10 N. Broad street,             | Philadelphia.          |
| Lesser, William,       | Sunbury,                        | Northumberland county. |
| Leffingwell, James G., | Conneautville,                  | Crawford county.       |
| Legg, George A.,       | Honesdale,                      | Wayne county.          |
| Lehman, Frederick,     | 1246 Poplar street,             | Philadelphia.          |
| Lehman, Fred'k C.,     | 2622 Bridge street,             | Bridenburg.            |
| Lehr, Joseph F.,       | Lykens,                         | Dauphin county.        |
| Leidich, Percy G.,     | Thirteenth and Race streets,    | Philadelphia.          |
| Leighty, Eli C.,       | West Newton,                    | Westmoreland county.   |
| Leine, Arthur M.,      | Emerald and Cumberland streets, | Philadelphia.          |
| Leister, Harry W.,     | Huntingdon,                     | Huntingdon county.     |
| Leitch, Charles T.,    | Quakertown,                     | Bucks county.          |
| Leitzell, Charles B.,  | Derry Station.                  | Westmoreland county.   |
| Llewellyn, John Jay,   | Kingston,                       | Luzerne county.        |
| Llewellyn, Wm. H.,     | 1600 Chestnut street,           | Philadelphia.          |
| Lemberger, Joseph L.,  | Lebanon,                        | Lebanon county.        |
| Lenhardt, Oliver F.,   | Swede and Airy streets,         | Norristown.            |
| Leniger, Oscar M.,     | 5 Pine street,                  | Danville.              |
| Leonard, Abner C.,     | Hadley,                         | Mercer county.         |
| Leonard, Hannah E.,    | Hadley,                         | Mercer county.         |
| Leonard, Isaac E.,     | Nanticoke,                      | Luzerne county.        |
| Leonard, John F.,      | Bradford,                       | McKean county.         |
| Leonard, Robert P.,    | White Haven,                    | Luzerne county.        |
| Leshner, Edwin C.,     | Seventh and Diamond streets,    | Philadelphia.          |
| Leshner, John B.,      | 509 N. Second street,           | Philadelphia.          |
| Leslie, David A.,      | Parnassus,                      | Westmoreland county.   |
| Leslie, James C.,      | Parnassus,                      | Westmoreland county.   |
| Letzkus, William G.,   | Children's Hospital,            | Philadelphia.          |
| Levering, Howard M.,   | 4665 Washington street,         | Manayunk.              |
| Levy, David W.,        | 326 E. Girard avenue,           | Philadelphia.          |
| Lewis, Benjamin M.,    | 192 E. Market street,           | Wilkes-Barre.          |
| Lewis, Daniel E.,      | Edwardsville,                   | Luzerne county.        |
| Lewis, Elmer,          | East Berlin,                    | Adams county.          |
| Lewis, Fisher A.,      | 2445 Kensington avenue,         | Philadelphia.          |
| Lewis, John J.,        | Mt. Carmel,                     | Northumberland county. |
| Lewis, Llewellyn H.,   | 325 N. Second street,           | Chester.               |
| Lewis, Thomas, Jr.,    | 17 E. Centre street,            | Mahanoy City.          |
| Lewis, Thomas, Sr.,    | 17 E. Centre street,            | Mahanoy City.          |
| Lewis, Thomas D.,      | Providence,                     | Lackawanna county.     |
| Lewis, Thomas S.,      | Penfield,                       | Clearfield county.     |
| Lewis, William M.,     | 192 E. Market street,           | Wilkes-Barre.          |

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|--------------------------|---------------------------------|----------------------|
| Lewis, William T.,       | 3421 Spring Garden street,      | Philadelphia.        |
| Libhart, Anthony C.,     | Marietta,                       | Lancaster county.    |
| Libhart, Samuel H.,      | Marietta,                       | Lancaster county.    |
| Lichtenstein, A. M.,     | Cumberland,                     | Allegany county, Md. |
| Liggett, Samuel J.,      | 2547 N. Sixth street,           | Philadelphia.        |
| Lincoln, Otis,           | Wilkes-Barre,                   | Luzerne county.      |
| Linderman, Richard J.,   | Quakertown,                     | Bucks county.        |
| Lindsay, Christ. R.,     | Mercer,                         | Mercer county.       |
| Lindsley, Ransom G.,     | Corry,                          | Erie county.         |
| Lingle, Reuben D.,       | 1010 Chestnut street,           | Reading.             |
| Linn, George T.,         | 232 Main street,                | Monongahela City.    |
| Linn, Max C.,            | 5169 Butler street,             | Pittsburgh.          |
| Lippen, Harry,           | 4665 Washington street,         | Manayunk.            |
| Lippincott, Henry B.,    | Twentieth and Cherry streets,   | Philadelphia.        |
| Lisenring, Gibson H.,    | Downington,                     | Chester county.      |
| List, Joshua M.,         | Evans City,                     | Butler county.       |
| Litman, George W., Jr.,  | Uniontown,                      | Fayette county.      |
| Lits, Walter R.,         | Ashland,                        | Schuylkill county.   |
| Little, George B.,       | Washington,                     | Washington county.   |
| Livezey, John B.,        | Doylestown,                     | Bucks county.        |
| Lize, Alexander A.,      | Thirteenth and Lombard streets, | Philadelphia.        |
| Lloyd, James E.,         | 101 Queen street,               | Northumberland.      |
| Lloyd, James R.,         | Rochester,                      | Beaver county.       |
| Lloyd, William E.,       | Olyphant,                       | Lackawanna county.   |
| Locher, Chas. Adolph,    | 9 E. King street,               | Lancaster.           |
| Locher, Mrs. Margaret,   | 9 E. King street,               | Lancaster.           |
| Lochle, John F.,         | 701 Lehman street,              | Lebanon.             |
| Lochman, Charles N.,     | 24 N. Main street,              | Bethlehem.           |
| Lochman, William J.,     | 103 N. Seventh street,          | Allentown.           |
| Lock, John H.,           | 2401 E. Huntingdon street,      | Philadelphia.        |
| Lockhart, John R.,       | Freedom,                        | Beaver county.       |
| Loder, C. G. A.,         | 1539 Chestnut street,           | Philadelphia.        |
| Loder, N. Sherman,       | 517 S. Eighteenth street,       | Philadelphia.        |
| Loesch, William,         | 2327 Brown street,              | Philadelphia.        |
| Logan, William F.,       | 31 W. Third street,             | Williamsport.        |
| Lomax, F. F.,            | Monroeton,                      | Bradford county.     |
| Long, A. K.,             | Burnside,                       | Clearfield county.   |
| Long, Charles E.,        | 12 N. Queen street,             | Lancaster.           |
| Long, Christian L.,      | 1800 N. Fifteenth street,       | Philadelphia.        |
| Long, Jacob,             | 404 W. King street,             | Lancaster.           |
| Long, John C.,           | 12 N. Queen street,             | Lancaster.           |
| Long, John N. G.,        | 1434 Columbia avenue,           | Philadelphia.        |
| Long, Robert P.,         | Mechanicsburg,                  | Cumberland county.   |
| Long, Samuel C.,         | Larimer's Station,              | Westmoreland county. |
| Long, Samuel S.,         | 19 S. George street,            | York county.         |
| Longhead, Raymond B.,    | 2607 Third street,              | Chester.             |
| Longstreet, Delavan,     | Carbondale,                     | Lackawanna county.   |
| Loomis, John C.,         | North East,                     | Erie county.         |
| Loop, George D.,         | North East,                     | Erie county.         |
| Lorenz, Carl,            | 418 Lackawanna avenue,          | Scranton.            |
| Lorman, Matthew F.,      | 1202 Mifflin street,            | Philadelphia.        |
| Lorman, W. Ellwood,      | 1202 Mifflin street,            | Philadelphia.        |
| Lorman, William H.,      | 1501 Dickinson street,          | Philadelphia.        |
| Lostetter, Jas. A., Jr., | Pulaski,                        | Lawrence county.     |
| Lostetter, William H.,   | Pulaski,                        | Lawrence county.     |
| Lott, Samuel,            | 2055 Warnock street,            | Philadelphia.        |
| Louderbough, Frank P.,   | 1436 N. Tenth street,           | Philadelphia.        |



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| Loughlin, James E.,    | 2901 Dauphin street,            | Philadelphia.           |
| Loughridge, Samuel S., | 1961 Germantown avenue,         | Philadelphia.           |
| Louther, J. M.,        | Somerset,                       | Somerset county.        |
| Love, J. Harry,        | 3742 Market street,             | Philadelphia.           |
| Love, Jesse B.,        | New Castle,                     | Lawrence county.        |
| Love, Sylvester M.,    | Rixford,                        | McKean county.          |
| Lovett, Emmor,         | Fifteenth and Oxford streets,   | Philadelphia.           |
| Low, William,          | Glenwood street,                | Pittsburgh, South Side. |
| Lowe, Clement B.,      | Ninth and Vine streets,         | Philadelphia.           |
| Lowe, James W.,        | Girard,                         | Erie county.            |
| Lowe, Samuel A.,       | Unicntown,                      | Fayette county.         |
| Lowenberg, Joseph,     | Arch and Airy streets,          | Norristown.             |
| Lucas, Harry C.,       | Waynesburg,                     | Greene county.          |
| Ludlam, William H.,    | Bristol,                        | Bucks county.           |
| Ludwig, Oscar,         | Dunmore,                        | Lackawanna county.      |
| Luerssen, Frank,       | 915 W. Cumberland street,       | Philadelphia.           |
| Lukens, Jacob Parry,   | Upland,                         | Delaware county.        |
| Lumb, Abram L.,        | 4764 Frankford avenue,          | Philadelphia.           |
| Lusk, Sobeski,         | New Castle,                     | Delaware county.        |
| Lutz, Horace C.,       | 15 N. Main street,              | Wilkes-Barre.           |
| Lutz, Irwin,           | Blainesport,                    | Lancaster county.       |
| Lutz, Isaac D.,        | 150 N. Duke street,             | Lancaster.              |
| Lydell, James,         | Cambridgeboro',                 | Crawford county.        |
| Lyman, David C.,       | Eleventh street and Girard av., | Philadelphia.           |
| Lynch, Albert J.,      | 1020 Spring Garden street,      | Philadelphia.           |
| Lynch, B. Eugene,      | Bennett,                        | Allegheny county.       |
| Lynch, Charles A.,     | Elizabeth,                      | Allegheny county.       |
| Lynch, William C.,     | Scottdale,                      | Westmoreland county.    |
| Lyon, Francis K.,      | North East,                     | Erie county.            |
| Lyons, Frank E.,       | Youngstown,                     | Mahoning county, Ohio.  |
| Lytle, John M.,        | Marion,                         | Indiana county.         |
| Lytle, John S.,        | Sewickley,                      | Allegheny county.       |
| Lyttle, James M.,      | 89 Centre avenue,               | Pittsburgh.             |
| Lytton, George W.,     | Smithfield and Liberty streets, | Pittsburgh.             |
| Mack, John S.,         | Slatington,                     | Lehigh county.          |
| Mackey, Clarence,      | Robbins Station,                | Westmoreland county.    |
| Mackey, Harry W.,      | Darlington,                     | Beaver county.          |
| Mackintosh, J. C.,     | 918 State street,               | Erie.                   |
| MacMillan, John C.,    | Latrobe,                        | Westmoreland county.    |
| MacNair, Edward D.,    | 4099 Lancaster avenue,          | Philadelphia.           |
| MacNutt, Edwin K.,     | South Bethlehem,                | Northampton county.     |
| Macpherson, William,   | 349 Wharton street,             | Philadelphia.           |
| Madeira, Robert W.,    | Sixth and Walnut streets,       | Reading.                |
| Maggini, A. P.,        | Braddock,                       | Allegheny county.       |
| Magill, Robert D.,     | Danville,                       | Montour county.         |
| Magill, Thomas,        | Freeport,                       | Armstrong county.       |
| Magowan, James D.,     | Kane,                           | McKean county.          |
| Maier, John,           | 2634 Kensington avenue,         | Philadelphia.           |
| Main, Clinton E.,      | 3600 Kensington avenue,         | Philadelphia.           |
| Main, Comer B.,        | Union City,                     | Erie county.            |
| Maine, George D.,      | Mainsburg,                      | Tioga county.           |
| Mains, Eugene F.,      | McKeesport,                     | Allegheny county.       |
| Maize, Charles F.,     | Queen and Morris streets,       | Germantown.             |
| Maize, Hannah M.,      | Ashland,                        | Schuylkill county.      |
| Malpass, William H.,   | League Island,                  | Philadelphia.           |
| Mancher, Joseph V.,    | Carrolltown,                    | Cambria county.         |

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| Mangold, Ernest, . . .      | 64 Lowry street, . . . . .          | Allegheny.             |
| Manley, James A., . . .     | Dunmore, . . . . .                  | Lackawanna county.     |
| Manley, Lawrence E., . .    | Canton, . . . . .                   | Bradford county.       |
| Manlick, William F., . .    | 411 Locust street, . . . . .        | Columbia.              |
| Manlove, Harry C., . . .    | 1600 Pine street, . . . . .         | Philadelphia.          |
| Manners, William R., . .    | 1201 Chestnut street, . . . . .     | Philadelphia.          |
| Marchand, Samuel R., . .    | Manor Station, . . . . .            | Westmoreland county.   |
| Marcy, Charles H., . . .    | Tunkhannock, . . . . .              | Wyoming county.        |
| Maris, Edward, . . . . .    | 1106 Pine street, . . . . .         | Philadelphia.          |
| Maris, Robert W., . . . .   | 1300 S. Seventeenth street, . . . . | Philadelphia.          |
| Markell, Frank E., . . . .  | Connellsville, . . . . .            | Fayette county.        |
| Markell, W. Grayson, . .    | 6219 Pennsylvania avenue, . . . .   | Pittsburgh.            |
| Markley, George H., . . .   | Third and Walnut streets, . . . .   | Harrisburg.            |
| Markley, William A., . .    | 220 S. Third street, . . . . .      | Reading.               |
| Marsh, George E., . . . .   | Townville, . . . . .                | Crawford county.       |
| Marshall, Archie S., . . .  | Portersville, . . . . .             | Butler county.         |
| Marshall, Daniel W., . . .  | New Holland, . . . . .              | Lancaster county.      |
| Marshall, Donaldson, . .    | 1215 Market street, . . . . .       | Philadelphia.          |
| Marshall, James M., . . .   | Portersville, . . . . .             | Butler county.         |
| Marshall, Joseph D., . . .  | Bustleton, . . . . .                | Philadelphia.          |
| Marshall, Robert C., . . .  | West Fairview, . . . . .            | Cumberland county.     |
| Marshall, Robert T., . . .  | 1215 Market street, . . . . .       | Philadelphia.          |
| Marshall, Rush P., . . . .  | 1545 Race street, . . . . .         | Philadelphia.          |
| Marshall, Samuel D., . . .  | Sixth and Reed streets, . . . . .   | Philadelphia.          |
| Marshall, Thomas C., . . .  | 1901 Carson street, . . . . .       | Pittsburgh.            |
| Marshall, Thomas D., . . .  | Blairsville, . . . . .              | Indiana county.        |
| Martin, Andrew E., . . . .  | Derry Station, . . . . .            | Westmoreland county.   |
| Martin, Andrew P., . . . .  | Lewistown, . . . . .                | Mifflin county.        |
| Martin, Charles H., . . . . | 608 S. Forty-second street, . . . . | Philadelphia.          |
| Martin, Charles M., . . . . | Sunbury, . . . . .                  | Northumberland county. |
| Martin, David G., . . . . . | Martindale, . . . . .               | Lancaster county.      |
| Martin, Emlen, . . . . .    | Bristol, . . . . .                  | Bucks county.          |
| Martin, Henry C., . . . .   | 17 S. Queen street, . . . . .       | Lancaster.             |
| Martin, Hugh H., . . . .    | Franklin, . . . . .                 | Venango county.        |
| Martin, John E., . . . . .  | Lock Haven, . . . . .               | Clinton county.        |
| Martin, Samuel W., . . . .  | Lewistown, . . . . .                | Mifflin county.        |
| Martindell, William N., . . | 306 Cherry street, . . . . .        | Philadelphia.          |
| Martolf, William P., . . .  | 431 Market street, . . . . .        | Pittsburgh.            |
| Masholder, Jacob H., . . .  | 2724 Master street, . . . . .       | Philadelphia.          |
| Mason, George W., . . . .   | Lock Haven, . . . . .               | Clinton county.        |
| Masser, Frank R., . . . .   | Sunbury, . . . . .                  | Northumberland county. |
| Masters, Clarendon G., . .  | Everett, . . . . .                  | Bedford county.        |
| Mateer, J. Ross, . . . . .  | 1501 Eleventh avenue, . . . . .     | Altoona.               |
| Mateer, Robert B., . . . .  | 736 S. Thirteenth street, . . . . . | Philadelphia.          |
| Mateer, R. M., . . . . .    | Elderton, . . . . .                 | Armstrong county.      |
| Mather, Charles V., . . . . | Bear Lake, . . . . .                | Warren county.         |
| Mathiott, George H., . . .  | Mount Jackson, . . . . .            | Lawrence county.       |
| Matlack, Granville T., . .  | Miners' Mills, . . . . .            | Luzerne county.        |
| Matos, Louis A., . . . . .  | 3943 Fairmount avenue, . . . . .    | Philadelphia.          |
| Matson, William F., . . . . | Punxsutawney, . . . . .             | Jefferson county.      |
| Mattern, John W., . . . .   | Philipsburg, . . . . .              | Centre county.         |
| Mattern, R. B., . . . . .   | Franklin, . . . . .                 | Venango county.        |
| Mattern, William K., . . .  | 2602 Germantown avenue, . . . . .   | Philadelphia.          |
| Matteson, David D., . . . . | Uniontown, . . . . .                | Fayette county.        |
| Matthews, Abel J., . . . .  | Chalfont, . . . . .                 | Bucks county.          |
| Matthews, Charles W., . . . | 320 Lackawanna avenue, . . . . .    | Scranton.              |
| Matthews, Richard J., . . . | 320 Lackawanna avenue, . . . . .    | Scranton.              |

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| Mauk, George W., Jr.,       | Claysburg, . . . . .                  | Blair county.       |
| Maurer, George B., . .      | 719 Walnut street, . . . . .          | Reading.            |
| May, George R., . . . .     | 36 S. Ninth street, . . . . .         | Lebanon.            |
| May, Rollin R., . . . .     | 2441 Brown street, . . . . .          | Philadelphia.       |
| Mayer, Albert H., . . . .   | 258 S. Ninth street, . . . . .        | Reading.            |
| Mayer, Charles E., . . .    | Boyertown, . . . . .                  | Berks county.       |
| Mayer, William C., . . .    | 231 Richmond street, . . . . .        | Philadelphia.       |
| Mayes, Thomas E., . . .     | Lewistown, . . . . .                  | Mifflin county.     |
| Mayhew, Frederick W.,       | Honesdale, . . . . .                  | Wayne county.       |
| McAllister, James A., . .   | New Brighton, . . . . .               | Beaver county.      |
| McAteer, William W., . .    | Loretto, . . . . .                    | Cambria county.     |
| McBride, Homer J., . . .    | Federal and Ohio streets, . . . . .   | Allegheny.          |
| McCain, Stuart B., . . . .  | Rush, . . . . .                       | Susquehanna county. |
| McCallister, William C.,    | 249 Main street, . . . . .            | Monongahela City.   |
| McCandless, Charles S.,     | North Clarendon, . . . . .            | Warren county.      |
| McCarthy, Cornelius B.,     | Shenandoah, . . . . .                 | Schuylkill county.  |
| McCarthy, Patrick T., . .   | Oil City, . . . . .                   | Venango county.     |
| McCarthy, V. B., . . . .    | Mapleton Depot, . . . . .             | Huntingdon county.  |
| McCarthy, Willard E., . .   | 4727 Liberty avenue, . . . . .        | Pittsburgh.         |
| McCartney, F. S., . . . .   | 1901 Carson street, . . . . .         | Pittsburgh.         |
| McCartney, Warren C., . .   | Coalport, . . . . .                   | Clearfield county.  |
| McCartney, William B., . .  | 516 Market street, . . . . .          | Pittsburgh.         |
| McCarty, John J., . . . .   | Kendall Creek, . . . . .              | McKean county.      |
| McCarty, R. H., . . . . .   | 1602 Venango street, . . . . .        | Philadelphia.       |
| McCaskey, Cyrus R., . . .   | 6 Meadow street, . . . . .            | Pittsburgh.         |
| McCauley, John S., . . . .  | 142 Seller street, . . . . .          | Philadelphia.       |
| McCausland, James R., . .   | Montrose, . . . . .                   | Susquehanna county. |
| McCaw, George S., . . . .   | New Brighton, . . . . .               | Beaver county.      |
| McCay, Mary A., . . . . .   | 119 E. Queen street, . . . . .        | Northumberland.     |
| McCay, Susan C., . . . .    | 119 E. Queen street, . . . . .        | Northumberland.     |
| McChesney, W. A., . . . .   | Shelocta, . . . . .                   | Indiana county.     |
| McClaran, J. Fred., . . . . | Saltsburg, . . . . .                  | Indiana county.     |
| McClaran, Joe A., . . . .   | Saltsburg, . . . . .                  | Indiana county.     |
| McClaran, Sarah E., . . .   | 19 Frankstown avenue, . . . . .       | Pittsburgh.         |
| McClaran, William L., . .   | 19 Frankstown avenue, . . . . .       | Pittsburgh.         |
| McCleary, J. A., . . . . .  | Altoona, . . . . .                    | Blair county.       |
| McCleery, S. B., . . . . .  | 60 N. Prince street, . . . . .        | Lancaster.          |
| McClelland, James K., . .   | 81 Federal street, . . . . .          | Allegheny.          |
| McClelland, John C., . . .  | Freeport, . . . . .                   | Armstrong county.   |
| McClintock, J. R. B., . . . | 230 Chestnut street, . . . . .        | Philadelphia.       |
| McClintock, Wm. C., . . .   | 69 N. Second street, . . . . .        | Philadelphia.       |
| McCloskey, Chas. E. R., . . | 231 N. Twelfth street, . . . . .      | Philadelphia.       |
| McCloskey, John B., . . . . | Morris, . . . . .                     | Tioga county.       |
| McCloud, Benton, . . . . .  | Darlington, . . . . .                 | Beaver county.      |
| McClure, Berthier, . . . .  | Danville, . . . . .                   | Montour county.     |
| McClure, Carlton E., . . .  | New Castle, . . . . .                 | Lawrence county.    |
| McClure, Francis C., . . .  | 2039 Germantown avenue, . . . . .     | Philadelphia.       |
| McClure, Harvey H., . . . . | Elizabeth, . . . . .                  | Allegheny county.   |
| McClure, Howard W., . . .   | Hazleton, . . . . .                   | Luzerne county.     |
| McClure, William H., . . .  | Maytown, . . . . .                    | Lancaster county.   |
| McClure, William J., . . .  | York, . . . . .                       | York county.        |
| McClure, William P., . . .  | Sheffield, . . . . .                  | Warren county.      |
| McCullough, A. J., . . . .  | 231 Frankstown avenue, . . . . .      | Pittsburgh.         |
| McCullough, Robert J., . .  | 6 Elm street, . . . . .               | Oil City.           |
| McComb, Alonzo D., . . . .  | West Millville, . . . . .             | Clarion county.     |
| McCombs, William, . . . .   | Eleventh and Brown streets, . . . . . | Philadelphia.       |
| McConaughty, Thos. S., . .  | Washington, . . . . .                 | Washington county.  |

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| McConnell, James L.,    | Wylie avenue and Fulton street,  | Pittsburgh.            |
| McConnell, John C.,     | New Milford,                     | Susquehanna county.    |
| McCormick, Blanche,     | 244 W. King street,              | Lancaster.             |
| McCormick, D. H.,       | Connellsville,                   | Fayette county.        |
| McCormick, Harry C.,    | Connellsville,                   | Fayette county.        |
| McCormick, Henry C.,    | Pen Argyl,                       | Northampton county.    |
| McCormick, James H.,    | Watsonstown,                     | Northumberland county. |
| McCormick, M. A.,       | 244 W. King street,              | Lancaster.             |
| McCormick, Sallie,      | 244 W. King street,              | Lancaster.             |
| McCoy, Edgar B.,        | Smethport,                       | McKean county.         |
| McCoy, Henry L.,        | Smethport,                       | McKean county.         |
| McCoy, Thomas F.,       | 2500 Jefferson street,           | Philadelphia.          |
| McCrea, James T.,       | Creekside,                       | Indiana county.        |
| McCready, Andrew,       | Duncansville,                    | Blair county.          |
| McCreary, Joseph R.,    | Homewood av. and Grazier st.,    | Pittsburgh.            |
| McCreight, Robert,      | 1340 Montgomery avenue,          | Philadelphia.          |
| McCullough, Clem B.,    | Oxford,                          | Chester county.        |
| McCullough, M. L.,      | 231 N. Twelfth street,           | Philadelphia.          |
| McCullough, Mollie,     | Farmington,                      | Fayette county.        |
| McCullough, Peter A.,   | Oil City,                        | Venango county.        |
| McCurdy, John A.,       | Steeltown,                       | Dauphin county.        |
| McCurdy, Wilbur E.,     | 24 Baltimore street,             | Gettysburg.            |
| McDaniel, Harry,        | Highspire,                       | Dauphin county.        |
| McDonald, Chas. R.,     | Perryopolis,                     | Fayette county.        |
| McDonald, G. F.,        | Ethel Landing,                   | Beaver county.         |
| McDonald, John A.,      | Reedsville,                      | Mifflin county.        |
| McDonald, J. S., Jr.,   | 455 Fifth avenue,                | Pittsburgh.            |
| McDonald, Wm. A.,       | Reedsville,                      | Mifflin county.        |
| McElfresh, J. A.,       | 102 Seventh avenue,              | Pittsburgh.            |
| McElhenny, Peter,       | Pittston,                        | Luzerne county.        |
| McElroy, James C.,      | 113 Federal street,              | Allegheny.             |
| McElwee, Elmer J.,      | Mount Pleasant,                  | Westmoreland county.   |
| McFadden, John J.,      | Twentieth and Dickinson streets, | Philadelphia.          |
| McFadden, Joseph,       | Lewistown,                       | Mifflin county.        |
| McFadden, Robert,       | 1731 Howard street,              | Philadelphia.          |
| McFadden, William,      | 921 S. Tenth street,             | Philadelphia.          |
| McFarland, John R.,     | Saltsburg,                       | Indiana county.        |
| McFarland, Winfield S., | Sharon,                          | Mercer county.         |
| McFayden, Wm. T.,       | 410 W. Eighth street,            | Erie.                  |
| McFeeters, Andrew J.,   | 3526 Haverford street,           | Philadelphia.          |
| McFerran, Jerem. D.,    | Twelfth and Race streets,        | Philadelphia.          |
| McGaffie, J. D.,        | Cooperstown,                     | Venango county.        |
| McGann, Michael J.,     | 601 Grant street,                | Pittsburgh.            |
| McGarr, Mrs. J. L.,     | 307 Market street,               | Pittsburgh.            |
| McGarrah, James P.,     | 109 Pine street,                 | Williamsport.          |
| McGarrah, William H.,   | 209 Lackawanna avenue,           | Scranton.              |
| McGee, T. J.,           | Sharpsburg,                      | Allegheny county.      |
| McGibbons, Harry,       | Uniontown,                       | Fayette county.        |
| McGinness, John S.,     | 13 Grove street,                 | Lock Haven.            |
| McGowan, Samuel H.,     | Seventh and Cumberland streets,  | Lebanon.               |
| McGrew, Thomas B.,      | Jefferson,                       | Allegheny county.      |
| McGuffin, George L.,    | New Castle,                      | Lawrence county.       |
| McHenry, Thomas,        | 62 Irwin avenue,                 | Allegheny.             |
| McIntyre, William,      | 2429 Frankford avenue,           | Philadelphia.          |
| McJunkin, Walter L.,    | 11 S. Second street,             | Clearfield.            |
| McKean, A. H.,          | Beaver Falls,                    | Beaver county.         |
| McKean, A. J.,          | Mercer,                          | Mercer county.         |



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| McKee, David M., . . .     | 20 Chesnut street, . . . . .      | Allegheny.             |
| McKee, Harry A., . . .     | Homestead, . . . . .              | Allegheny county.      |
| McKee, John L., . . .      | Millerstown, . . . . .            | Butler county.         |
| McKee, Joseph, . . .       | 3952 Lancaster avenue, . . . . .  | Philadelphia.          |
| McKee, Joseph A., . . .    | 312 Chestnut avenue, . . . . .    | Altoona.               |
| McKee, Mrs. N. A., . . .   | Plymouth, . . . . .               | Luzerne county.        |
| McKee, Nannie E., . . .    | Glenfield, . . . . .              | Allegheny county.      |
| McKelvy, George A., . .    | Catawissa, . . . . .              | Columbia county.       |
| McKinley, John, . . .      | New Castle, . . . . .             | Lawrence county.       |
| McKinney, Robert A., . .   | Plain Grove, . . . . .            | Lawrence county.       |
| McKinney, Wm. J., . . .    | North Liberty, . . . . .          | Mercer county.         |
| McKnight, Wm. A., . . .    | Sharon, . . . . .                 | Mercer county.         |
| McLain, J. R., . . .       | Claysville, . . . . .             | Washington county.     |
| McLain, Wm. J. E., . . .   | Dravosburg, . . . . .             | Allegheny county.      |
| McLaughlin, George A., .   | New Salem, . . . . .              | Westmoreland county.   |
| McLean, Chandler N., . .   | Union City, . . . . .             | Erie county.           |
| McLees, Warden J., . . .   | 100 E. Main street, . . . . .     | Lock Haven.            |
| McLure, John H., . . .     | Prospect, . . . . .               | Butler county.         |
| McMahan, James, . . .      | Watsonstown, . . . . .            | Northumberland county. |
| McMechen, W. B., . . .     | 3201 Powelton avenue, . . . . .   | Philadelphia.          |
| McMichael, James C., . .   | Fredonia, . . . . .               | Mercer county.         |
| McMichael, John D., . .    | Geneva, . . . . .                 | Crawford county.       |
| McMichael, Josiah K., . .  | 147 Wylie avenue, . . . . .       | Pittsburgh.            |
| McMichael, Phebie M., . .  | Fredonia, . . . . .               | Mercer county.         |
| McMillan, John K., . . .   | Washington, . . . . .             | Washington county.     |
| McMullin, Andrew, . . .    | 3017 Frankford avenue, . . . . .  | Philadelphia.          |
| McMurray, Henry B., . .    | Burgettstown, . . . . .           | Washington county.     |
| McNabb, Henry S., . . .    | 120 N. Twelfth street, . . . . .  | Philadelphia.          |
| McNally, Richard, . . .    | 291 Webster avenue, . . . . .     | Pittsburgh.            |
| McNair, J. Sharon, . . .   | Hazleton, . . . . .               | Luzerne county.        |
| McNaughton, N. W., . . .   | Westfield, . . . . .              | Tioga county.          |
| McNeal, William T., . . .  | Mauch Chunk, . . . . .            | Carbon county.         |
| McNeil, John M., . . .     | Scottdale, . . . . .              | Westmoreland county.   |
| McNeil, Robert, Jr., . . . | 120 W. York street, . . . . .     | Philadelphia.          |
| McNitt, Gilbert F., . . .  | Sheffield, . . . . .              | Warren county.         |
| McVean, Charles, . . .     | St. Mary's, . . . . .             | Elk county.            |
| McVean, Willard, . . .     | St. Mary's, . . . . .             | Elk county.            |
| McVickar, Matthew, . . .   | 1145 S. Broad street, . . . . .   | Philadelphia.          |
| Meade, Julien F., . . .    | 501 S. Fourth street, . . . . .   | Philadelphia.          |
| Means, Ralph W., . . .     | 206 North avenue, . . . . .       | Allegheny.             |
| Means, William B., . . .   | 206 North avenue, . . . . .       | Allegheny.             |
| Means, William B., . . .   | Lebanon, . . . . .                | Lebanon county.        |
| Mebane, D. C., . . .       | Parsons, . . . . .                | Luzerne county.        |
| Mebus, Fred L., . . .      | 114 S. Third street, . . . . .    | Easton.                |
| *Mebus, J. Walter, . . .   | 114 S. Third street, . . . . .    | Easton.                |
| Meck, Warren E., . . .     | Milton, . . . . .                 | Northumberland county. |
| Meckelburg, Henry, . . .   | 342 Taylor street, . . . . .      | Pittsburgh.            |
| Medara, Thomas J., . . .   | 256 Richmond street, . . . . .    | Philadelphia.          |
| Medd, Henry, . . .         | 2504 Kensington avenue, . . . . . | Philadelphia.          |
| Megilligan, Charles H., .  | Avondale, . . . . .               | Chester county.        |
| Meisenholder, Robt. N., .  | East Berlin, . . . . .            | Adams county.          |
| Melhorn, Augustus H., . .  | Hanover, . . . . .                | York county.           |
| Mell, Samuel S., . . .     | 310 S. Second street, . . . . .   | Harrisburg.            |
| Melick, Wm. McClure, . .   | Muncy, . . . . .                  | Lycoming county.       |
| Melick, Wilson D., . . .   | Sunbury, . . . . .                | Northumberland county. |
| Melot, Irvin G., . . .     | Philipsburg, . . . . .            | Centre county.         |
| Mench, Martin L., . . .    | Hartleton, . . . . .              | Union county.          |

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| Menger, Edward F.,      | 1526 N. Eleventh street,       | Philadelphia.       |
| Mensch, James G.,       | Pennsburg,                     | Montgomery county.  |
| Mercer, Eugenia C.,     | Beaver Falls,                  | Beaver county.      |
| Mercer, James H.,       | Bloomsburg,                    | Columbia county.    |
| Mercer, Melanethon B.,  | Florence,                      | Washington county.  |
| Meredith, S. Carlisle,  | Sixteenth and Lombard streets, | Philadelphia.       |
| Merkle, William,        | 2006 Camac street,             | Philadelphia.       |
| Merrell, Albert F.,     | 741 N. Seventeenth street,     | Philadelphia.       |
| Merrell, Hubert J.,     | 916 Girard avenue,             | Philadelphia.       |
| Merritt, David,         | Twenty-third and Pine streets, | Philadelphia.       |
| Mershon, E. N. B.,      | Saxonburg,                     | Butler county.      |
| Mershon, H. L.,         | 1607 Penn avenue,              | Pittsburgh.         |
| Meserole, Thomas H.,    | Parsons,                       | Luzerne county.     |
| Messenger, Grove G.,    | Ridgway,                       | Elk county.         |
| Metti, William S.,      | 2231 Vine street,              | Philadelphia.       |
| Metz, Frank M.,         | Etna,                          | Allegheny county.   |
| Metz, Jacob K.,         | Allensville,                   | Mifflin county.     |
| Meyer, Charles,         | Macungie,                      | Lehigh county.      |
| Meyer, Charles C.,      | 1802 Callowhill street,        | Philadelphia.       |
| Meyer, J. Gross,        | 37 Hazle avenue,               | Wilkes-Barre.       |
| Meyer, Robert H.,       | Nanticoke,                     | Luzerne county.     |
| Meyer, William J.,      | East Mauch Chunk,              | Carbon county.      |
| Michelotti, Victor,     | 737 S. Eighth street,          | Philadelphia.       |
| Michener, William,      | California,                    | Washington county.  |
| Micke, Lewis A.,        | Easton,                        | Northampton county. |
| Mickey, Harry E.,       | Morton,                        | Delaware county.    |
| Mickley, Ewald G. F.,   | 1208 Girard avenue,            | Philadelphia.       |
| Mierzwa, Richard R. E., | 624 Smithfield street,         | Pittsburgh.         |
| Mikle, John O.,         | Fourth and Peffer streets,     | Harrisburg.         |
| Miles, John Q.,         | Kennett Square,                | Chester county.     |
| Miller, Aaron G.,       | Ninth and Christian streets,   | Philadelphia.       |
| Miller, Adolph Wm.,     | 400 N. Third street,           | Philadelphia.       |
| Miller, Albert C.,      | Hillsville,                    | Lawrence county.    |
| Miller, Andrew O.,      | Farmington,                    | Butler county.      |
| Miller, Charles A.,     | Liberty,                       | Tioga county.       |
| Miller, Charles W.,     | Meadville,                     | Crawford county.    |
| Miller, Daniel M.,      | New Chester,                   | Adams county.       |
| Miller, Eli E.,         | Beaver Falls,                  | Beaver county.      |
| Miller, George H.,      | McDonald,                      | Washington county.  |
| Miller, George M.,      | Burgettstown,                  | Washington county.  |
| Miller, George S. R.,   | Houtzdale,                     | Clearfield county.  |
| Miller, Gustav J.,      | 1524 Peach street,             | Erie.               |
| Miller, Jacob,          | Tenth and Market streets,      | Philadelphia.       |
| Miller, Jacob F.,       | Beaver Falls,                  | Beaver county.      |
| Miller, James A.,       | Nineteenth and Oxford streets, | Philadelphia.       |
| Miller, John H.,        | Newville,                      | Cumberland county.  |
| Miller, John L.,        | Montgomery,                    | Lycoming county.    |
| Miller, John P.,        | 15 N. Eleventh street,         | Philadelphia.       |
| Miller, John W.,        | 289 Western avenue,            | Allegheny.          |
| Miller, Joseph C.,      | 2344 N. Tenth street,          | Philadelphia.       |
| Miller, Louisa,         | New Chester,                   | Adams county.       |
| Miller, Milford B.,     | 19 Frankstown avenue,          | Pittsburgh.         |
| Miller, Milton G.,      | Blairsville,                   | Indiana county.     |
| Miller, Philip,         | 336 S. Second street,          | Philadelphia.       |
| Miller, Samuel G.,      | McKeesport,                    | Allegheny county.   |
| Miller, Samuel R.,      | Bangor,                        | Northampton county. |
| Miller, Summerfield J., | Ansonville,                    | Clearfield county.  |

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| Miller, Warren D.,       | Manheim,                           | Lancaster county.      |
| Miller, William W.,      | 1802 Gratz street,                 | Philadelphia.          |
| Milligan, Decatur,       | 509 N. Second street,              | Philadelphia.          |
| Millington Joseph T.,    | 1740 Bouvier street,               | Philadelphia.          |
| Mills, John C.,          | Duke Centre,                       | McKean county.         |
| Millspaugh, Daniel F.,   | Kendall Creek,                     | McKean county.         |
| Milner, James P.,        | 427 S. Sixth street,               | Philadelphia.          |
| Milton, James H. F.,     | Sixty-first st. and Haverford av., | Philadelphia.          |
| Minesinger, Thos. L.,    | Smith's Ferry,                     | Beaver county.         |
| Minnich, Luther W.,      | 1021 Market street,                | Philadelphia.          |
| Minnick, W. G.,          | 86 Monterey street,                | Allegheny.             |
| Minster, P. M.,          | Langhorne,                         | Bucks county.          |
| Minton, Bradley,         | Claysville,                        | Washington county.     |
| Mishler, John H.,        | Denver,                            | Lancaster county.      |
| Mitchell, Benj. Bentley, | Troy,                              | Bradford county.       |
| Mitchell, Henry F.,      | Coaltown,                          | Butler county.         |
| Mitchell, Robert H.,     | 1306 Filbert street,               | Philadelphia.          |
| Mitchell, William S.,    | 1 E. Main street,                  | Susquehanna.           |
| Mitcheltree, J. C.,      | Edinburg,                          | Lawrence county.       |
| Mitcheltree, Wilson,     | Edinburg,                          | Lawrence county.       |
| Mix, Wesley H.,          | Sugar Grove,                       | Warren county.         |
| Mix, Wilber F.,          | Sugar Grove,                       | Warren county.         |
| Moechel, John R.,        | Seventh and Spring Garden sts.,    | Philadelphia.          |
| Moeller, C. Adolph F.,   | 33 N. Twelfth street,              | Harrisburg.            |
| Moerk, Frank X.,         | 145 N. Tenth street,               | Philadelphia.          |
| Moersch, J. F.,          | 216 Market street,                 | Pittsburgh.            |
| Moffet, John, Jr.,       | 1614 N. Second street,             | Philadelphia.          |
| Moffet, William,         | 1614 N. Second street,             | Philadelphia.          |
| Moffett, Charles E.,     | 891 N. Eighth street,              | Philadelphia.          |
| Moffett, James, Jr.,     | 521 W. Venango street,             | Philadelphia.          |
| Mohn, Charles L.,        | Fremont,                           | Snyder county.         |
| Mohn, George C.,         | Laurelton,                         | Union county.          |
| Mohr, John W.,           | 601 N. Ninth street,               | Reading.               |
| Moll, Horace,            | 1301 Market street,                | Philadelphia.          |
| Moller, John D.,         | 245 N. Fifth street,               | Philadelphia.          |
| Monks, Frederick C.,     | Kittanning,                        | Armstrong county.      |
| Montelius, R. W.,        | Mt. Carmel,                        | Northumberland county. |
| Montgomery, A. L. R.,    | 29 N. Diamond street,              | Mercer.                |
| Montgomery, Chas. L.,    | 29 N. Diamond street,              | Mercer.                |
| Montgomery, E. J.,       | 192 Main street,                   | Pittsburgh.            |
| Montgomery, William,     | Leechburg,                         | Armstrong county.      |
| Montgomery, Wm. H.,      | Glen Richey,                       | Clearfield county.     |
| Montgomery, Wm. R.,      | 29 N. Diamond street,              | Mercer.                |
| Moody, Charles W.,       | 601 N. Ninth street,               | Reading.               |
| Moody, McEllsworth.,     | Fremont,                           | Schuylkill county.     |
| Moors, Arthur E.,        | 80 Northampton street,             | Wilkes-Barre.          |
| Mook, Allison,           | Saegertown,                        | Crawford county.       |
| Moore, Christian,        | Bryn Mawr,                         | Montgomery county.     |
| Moore, Edward, Jr.,      | 732 S. Nineteenth street,          | Philadelphia.          |
| Moore, H. J.,            | Oval,                              | Lycoming county.       |
| Moore, Howard A.,        | Howard,                            | Centre county.         |
| Moore, Isaac H.,         | 291 S. Main street,                | Wilkes-Barre.          |
| Moore, James C.,         | Connellsville,                     | Fayette county.        |
| Moore, James J.,         | 3348 Market street,                | Philadelphia.          |
| Moore, James P.,         | Rochester,                         | Beaver county.         |
| Moore, Joachim B.,       | 501 S. Thirteenth street,          | Philadelphia.          |
| Moore, John D.,          | 2100 Mt. Vernon street,            | Philadelphia.          |

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| Moore, William D.,     | Connellsville,                   | Fayette county.        |
| Moore, William I.,     | Homer City,                      | Indiana county.        |
| Moorhead, Frank B.,    | Volant,                          | Armstrong county.      |
| Moreland, Andrew O.,   | Jamestown,                       | Mercer county.         |
| Moreland, James A.,    | Jamestown,                       | Mercer county.         |
| Morell, Charles M.,    | 528 Master street,               | Philadelphia.          |
| Morey, John S., Jr.,   | Royer's Ford,                    | Montgomery county.     |
| Morgan, Aston H.,      | 383 E. Market street,            | Wilkes-Barre.          |
| Morgan, B. G.,         | 101 N. Main avenue,              | Scranton.              |
| Morgan, Edward A.,     | 369 E. Market street,            | Wilkes-Barre.          |
| Morgan, Emily C.,      | 101 N. Main avenue,              | Scranton.              |
| Morgan, Frank E.,      | 1412 Walnut street,              | Philadelphia.          |
| Morgan, K. Elizabeth,  | 419 S. Fifteenth street,         | Philadelphia.          |
| Morrett, William H.,   | Mechanicsburg,                   | Cumberland county.     |
| Morris, Mrs. Annie E., | Liverpool,                       | Perry county.          |
| Morris, Charles,       | Carbondale,                      | Lackawanna county.     |
| Morris, Clinton S.,    | Garland,                         | Warren county.         |
| Morris, Frank R.,      | Ethel Landing,                   | Beaver county.         |
| Morris, Thomas R.,     | 686 Preble street,               | Allegheny.             |
| Morris, William H.,    | 603 Gray's Ferry road,           | Philadelphia.          |
| Morris, William J.,    | 26 McClure avenue,               | Allegheny.             |
| Morrison, Bower E.,    | Newton Hamilton,                 | Mifflin county.        |
| Morrison, James,       | Roxboro',                        | Philadelphia.          |
| Morrison, James D.,    | Mercer,                          | Mercer county.         |
| Morrison, John A.,     | Cochranville,                    | Chester county.        |
| Morrison, Robert,      | Oakdale Station,                 | Allegheny county.      |
| Morrison, William H.,  | 290 Beaver avenue,               | Allegheny.             |
| Morrison, William M.,  | Roxboro',                        | Philadelphia.          |
| Morriss, Lemuel G.,    | Second and Green streets,        | Philadelphia.          |
| Morrow, J. Wilson,     | Marchand,                        | Indiana county.        |
| Morse, Frank,          | 2148 Christian street,           | Philadelphia.          |
| Morse, H. B.,          | Tenth and York streets,          | Philadelphia.          |
| Morse, John E. G.,     | Oil City,                        | Venango county.        |
| Martin, Robert W.,     | Wampum,                          | Lawrence county.       |
| Morton, William J.,    | Warnock and Huntingdon streets,  | Philadelphia.          |
| Mosbaugh, L. P. Harry, | 3 Seneca street,                 | Pittsburgh.            |
| Moser, Altha L.,       | Uniontown,                       | Fayette county.        |
| Moser, Ira D.,         | Brumfieldville,                  | Berks county.          |
| Mountain, Walter S.,   | Confluence,                      | Somerset county.       |
| Mowers, Joseph H.,     | Shippensburg,                    | Cumberland county.     |
| Moyer, Edwin O.,       | Bradford,                        | McKean county.         |
| Moyer, Elmer E.,       | Bloomsburg,                      | Columbia county.       |
| Moyer, I. S.,          | Quakertown,                      | Bucks county.          |
| Moyer, John L.,        | Bloomsburg,                      | Columbia county.       |
| Moyer, Lucas N.,       | Bloomsburg,                      | Columbia county.       |
| Moyer, Reuben E.,      | 955 Randolph street,             | Philadelphia.          |
| Moyer, William E.,     | Sixteenth and Brown streets,     | Philadelphia.          |
| Moyer, William H.,     | Dalmatia,                        | Northumberland county. |
| Moyer, William P.,     | Freeburg,                        | Snyder county.         |
| Moyer, William S.,     | Bloomsburg,                      | Columbia county.       |
| Moylan, Cornelius,     | Conshohocken,                    | Montgomery county.     |
| Mueller, Henry,        | 4434 Lancaster avenue,           | Philadelphia.          |
| Muhlenberg, Benj. S.,  | 17 S. Queen street,              | Lancaster.             |
| Muhlenberg, Henry M.,  | 56 N. Fifth street,              | Reading.               |
| Muir, Clarence F.,     | Sixth street and Germantown av., | Philadelphia.          |
| Muir, Edwin S.,        | Huntingdon and Jasper streets,   | Philadelphia.          |
| Mulford, Harry K.,     | 1800 Market street,              | Philadelphia.          |



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| Mull, Harry, . . . . .          | Morrisdale, . . . . .                        | Bucks county.          |
| Mullhaupt, Alfred, . . . . .    | Saint Mary's, . . . . .                      | Elk county.            |
| Mullen, James B., . . . . .     | Kane, . . . . .                              | McKean county.         |
| Mullen, James J., . . . . .     | Dunbar, . . . . .                            | Fayette county.        |
| Mullin, Benj. F., . . . . .     | Fayette City, . . . . .                      | Fayette county.        |
| Mullock, Corwin, . . . . .      | 1949 N. Eighth street, . . . . .             | Philadelphia.          |
| Mumma, Edward W., . . . . .     | Bendersville, . . . . .                      | Adams county.          |
| Mumma, Frank G., . . . . .      | Mechanicsburg, . . . . .                     | Cumberland county.     |
| Munsch, Jennie S., . . . . .    | Bellevue, . . . . .                          | Allegheny county.      |
| Munshower, John, . . . . .      | Hillsdale, . . . . .                         | Indiana county.        |
| Munson, James H., . . . . .     | 501 S. Twenty-fourth street, . . . . .       | Philadelphia.          |
| Murdoch, Alex., Jr., . . . . .  | Washington, . . . . .                        | Washington county.     |
| Murdoch, George C., . . . . .   | Wampum, . . . . .                            | Lawrence county.       |
| Murjahn, Louis, . . . . .       | 2801 Girard avenue, . . . . .                | Philadelphia.          |
| Murphy, Ethelbert O., . . . . . | West Newton, . . . . .                       | Westmoreland county.   |
| Murphy, Francis K., . . . . .   | 2724 Gray's Ferry road, . . . . .            | Philadelphia.          |
| Murphy, John F., . . . . .      | 2 Carson street, . . . . .                   | Pittsburg, South Side. |
| Murphy, Thomas P., . . . . .    | Towanda, . . . . .                           | Bradford county.       |
| Murray, Bernard J., . . . . .   | 3286 Ridge avenue, . . . . .                 | Philadelphia.          |
| Murray, Edward R., . . . . .    | Fifteenth and South streets, . . . . .       | Philadelphia.          |
| Murray, Francis M., . . . . .   | 1015 Columbia avenue, . . . . .              | Philadelphia.          |
| Murray, Harry L., . . . . .     | Twenty-first and Norris streets, . . . . .   | Philadelphia.          |
| Murray, J. A., . . . . .        | Mahaffey, . . . . .                          | Clearfield county.     |
| Murray, Jared D., . . . . .     | Centre Hall, . . . . .                       | Centre county.         |
| Murray, John H., . . . . .      | 1900 Pine street, . . . . .                  | Philadelphia.          |
| Murray, John R., . . . . .      | Kittanning, . . . . .                        | Armstrong county.      |
| Murray, Malcolm, . . . . .      | 824 S. Fourth street, . . . . .              | Philadelphia.          |
| Murray, William R., . . . . .   | Twenty-first and Vine streets, . . . . .     | Philadelphia.          |
| Murtagh, John A., . . . . .     | 1000 S. Second street, . . . . .             | Philadelphia.          |
| Murto, Harry C., . . . . .      | 2908 Carson street, . . . . .                | Pittsburgh.            |
| Musgrave, Aaron W., . . . . .   | Welliversville, . . . . .                    | Columbia county.       |
| Musselman, D. G. E., . . . . .  | 839 N. Twentieth street, . . . . .           | Philadelphia.          |
| Musselman, David Z., . . . . .  | Braddock, . . . . .                          | Allegheny county.      |
| Musser, Omar H., . . . . .      | 1901 Arch street, . . . . .                  | Philadelphia.          |
| Musson, William A., . . . . .   | 1500 S. Broad street, . . . . .              | Philadelphia.          |
| Mutchler, Henry M., . . . . .   | E. Stroudsburg, . . . . .                    | Monroe county.         |
| Muthersbough, J. A., . . . . .  | Lewistown, . . . . .                         | Mifflin county.        |
| Myers, Edwin, . . . . .         | 32 Duval street, . . . . .                   | Germantown.            |
| Myers, Franklin, . . . . .      | Mahanoy City, . . . . .                      | Schuylkill county.     |
| Myers, Frank N., . . . . .      | 152 N. Seventh street, . . . . .             | Philadelphia.          |
| Myers, James H., . . . . .      | Lewistown, . . . . .                         | Mifflin county.        |
| Myers, John F., . . . . .       | 320 Lackawanna avenue, . . . . .             | Scranton.              |
| Myers, Josiah J., . . . . .     | Nescopeck, . . . . .                         | Luzerne county.        |
| Myers, Samuel J., . . . . .     | Emlenton, . . . . .                          | Venango county.        |
| Myers, Sarah S., . . . . .      | Emlenton, . . . . .                          | Venango county.        |
| Myers, Wilbur, . . . . .        | Knox, . . . . .                              | Clarion county.        |
| Nace, W. B., . . . . .          | Halifax, . . . . .                           | Dauphin county.        |
| Nagle, Thomas S., . . . . .     | 709 Hamilton street, . . . . .               | Allentown.             |
| Nebecker, Aquila, . . . . .     | 1201 Ellsworth street, . . . . .             | Philadelphia.          |
| Nebig, William G., . . . . .    | 2247 N. Fifth street, . . . . .              | Philadelphia.          |
| Nebinger, Jacob L., . . . . .   | 4239 Lancaster avenue, . . . . .             | Philadelphia.          |
| Neeley, Alexander E., . . . . . | 65 Rebecca street, . . . . .                 | Allegheny.             |
| Neely, Charles G., . . . . .    | Thirty-third and Chestnut streets, . . . . . | Philadelphia.          |
| Neely, J. A., . . . . .         | 232 Arch street, . . . . .                   | Philadelphia.          |
| Neely, John F., . . . . .       | Renovo, . . . . .                            | Clinton county.        |
| Neely, Joseph F., . . . . .     | 371 Rebecca street, . . . . .                | Allegheny.             |

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| Neely, William O., . . .       | Bradford, . . . . .                        | McKean county.         |
| Neff, George W., . . .         | 227½ S. George street, . . . . .           | York.                  |
| Neff, Jacob W., . . .          | 1736 Camac street, . . . . .               | Philadelphia.          |
| Neff, James W., . . .          | Morrisdale Mines, . . . . .                | Clearfield county.     |
| Neiler, Charles P., . . .      | Twenty-fifth and Bolton streets, . . . . . | Philadelphia.          |
| Neill, Alfred D., . . .        | Garland, . . . . .                         | Warren county.         |
| Neiman, John H., . . .         | Newton, . . . . .                          | Berks county.          |
| Neiman, Levi A., . . .         | 2621 Girard avenue, . . . . .              | Philadelphia.          |
| Nelson, William H., . . .      | 424 Fairmount avenue, . . . . .            | Philadelphia.          |
| Nelson, William W., . . .      | Jenkintown, . . . . .                      | Montgomery county.     |
| Newbaker, John B., . . .       | Treverton, . . . . .                       | Northumberland county. |
| Newbold, Henry A., . . .       | 4069 Chestnut street, . . . . .            | Philadelphia.          |
| Newbold, Thomas M., . . .      | 608 S. Forty-second street, . . . . .      | Philadelphia.          |
| Newburg, Grant, . . .          | Northumberland, . . . . .                  | Northumberland county. |
| Newcomer, Daniel G., . . .     | 502 Fifth avenue, . . . . .                | Pittsburgh.            |
| Newell, William W., . . .      | New Castle, . . . . .                      | Lawrence county.       |
| Newhard, Emily B., . . .       | Fernwood, . . . . .                        | Delaware county.       |
| Newhard, Robert M., . . .      | Fernwood, . . . . .                        | Delaware county.       |
| Newhart, Silas H., . . .       | Scranton, . . . . .                        | Lackawanna county.     |
| Newton, Benson C., . . .       | Buena Vista, . . . . .                     | Allegheny county.      |
| Newman, G. Ernst, . . .        | Canton, . . . . .                          | Bradford county.       |
| Newsham, Stanley P., . . .     | 1640 S. Fifth street, . . . . .            | Philadelphia.          |
| Newton, Alex. B., . . .        | Tenth and Market streets, . . . . .        | Philadelphia.          |
| Newton, Charles R., . . .      | Nicholson, . . . . .                       | Wyoming county.        |
| Newton, John A., . . .         | West Elizabeth, . . . . .                  | Allegheny county.      |
| Newton, John S., . . .         | 810 Preston street, . . . . .              | Philadelphia.          |
| Ney, John L., . . .            | Shartlesville, . . . . .                   | Berks county.          |
| Nice, Harry J., . . .          | Saxton, . . . . .                          | Bedford county.        |
| Nicholas, George T., . . .     | 12 State street, . . . . .                 | Oil City.              |
| Nicholas, John B., . . .       | 621 Race street, . . . . .                 | Harrisburg.            |
| Nick, Charles W., . . .        | 2404 Peach street, . . . . .               | Erie.                  |
| Nick, Frederick, . . .         | 1018 State street, . . . . .               | Erie.                  |
| Nick, William F., . . .        | 928 State street, . . . . .                | Erie.                  |
| Nickum, Elwood G., . . .       | Ninth and Vine streets, . . . . .          | Philadelphia.          |
| Nicond, Henry E., Jr., . . .   | Fifth and Lombard streets, . . . . .       | Philadelphia.          |
| Nisbet, Eliza J., . . .        | 87 Washington avenue, . . . . .            | Pittsburgh.            |
| Nisbet, William W., . . .      | 87 Washington avenue, . . . . .            | Pittsburgh.            |
| Niskey, Peter, . . .           | 1811 Ridge avenue, . . . . .               | Philadelphia.          |
| Nixon, Jacob S., . . .         | Chambersburg, . . . . .                    | Franklin county.       |
| Nixon, William G., . . .       | Chambersburg, . . . . .                    | Franklin county.       |
| Noaker, Harry O., . . .        | Milton, . . . . .                          | Northumberland county. |
| Nock, George W., . . .         | 643 Arch street, . . . . .                 | Philadelphia.          |
| Nolte, Henry A., . . .         | 162 N. Eighth street, . . . . .            | Philadelphia.          |
| Norman, Thomas, Jr., . . .     | Hites, . . . . .                           | Allegheny county.      |
| Norton, Albert E., . . .       | 2400 Columbia avenue, . . . . .            | Philadelphia.          |
| Norton, Bela E., . . .         | Goodell, . . . . .                         | McKean county.         |
| Notenstine, S. R., . . .       | Mount Pleasant, . . . . .                  | Westmoreland county.   |
| Notson, George W., . . .       | 4046 Lancaster avenue, . . . . .           | Philadelphia.          |
| Nourse, Charles F., . . .      | Centre avenue and Erin street, . . . . .   | Pittsburgh.            |
| Nowlin, Samuel F., . . .       | Bellwood, . . . . .                        | Blair county.          |
| Noyes, Lucius G., . . .        | 317 Second street, . . . . .               | Warren.                |
| Nunemacher, A. W., . . .       | Third and North streets, . . . . .         | Harrisburg.            |
| Nye, Hiram, . . . . .          | Enon Valley, . . . . .                     | Lawrence county.       |
| Oberholtzer, Charles H., . . . | Phoenixville, . . . . .                    | Chester county.        |
| Oberholtzer, Levi, . . .       | Phoenixville, . . . . .                    | Chester county.        |
| Obley, Henry A., . . .         | West Newton, . . . . .                     | Westmoreland county.   |

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| O'Brien, Bryan, . . . . .        | 1600 S. Tenth street, . . . . .         | Philadelphia.       |
| O'Brien, William, . . . . .      | Radnor, . . . . .                       | Delaware county.    |
| Ochse, George H., . . . . .      | 2300 Oxford street, . . . . .           | Philadelphia.       |
| O'Donnell, Timothy F., . . . . . | Parsons, . . . . .                      | Luzerne county.     |
| Oellig, Harry W., . . . . .      | Woodbury, . . . . .                     | Bedford county.     |
| Oetinger, Albert, . . . . .      | 1439 Brinton street, . . . . .          | Philadelphia.       |
| Ogden, James A., . . . . .       | 70 Woodland avenue, . . . . .           | Philadelphia.       |
| Ogden, John, . . . . .           | 1233 Walnut street, . . . . .           | Philadelphia.       |
| Ogilby, William, . . . . .       | 1800 Chestnut street, . . . . .         | Philadelphia.       |
| Ogle, Joseph N., . . . . .       | Rochester, . . . . .                    | Beaver county.      |
| Oglevee, Ferris E., . . . . .    | Vanderbilt, . . . . .                   | Fayette county.     |
| O'Hern, Maurice, . . . . .       | DuBois, . . . . .                       | Clearfield county.  |
| O'Keefe, S. C., . . . . .        | 720 Penn avenue, . . . . .              | Pittsburgh.         |
| O'Keefe, W. H., . . . . .        | 34 Fifth avenue, . . . . .              | Pittsburgh.         |
| Oliphant, Charles C., . . . . .  | 744 S. Sixth street, . . . . .          | Philadelphia.       |
| Oliphant, Louis, . . . . .       | 900 Callowhill street, . . . . .        | Philadelphia.       |
| Orth, Frederick C., . . . . .    | Holmesburg, . . . . .                   | Philadelphia.       |
| Osborn, Thomas, Jr., . . . . .   | Wellsburg, . . . . .                    | Erie county.        |
| Osborne, Melmoth M., . . . . .   | 1800 Market street, . . . . .           | Philadelphia.       |
| Ott, Charles W., . . . . .       | Fifth and Cumberland streets, . . . . . | Philadelphia.       |
| Ott, Emile, . . . . .            | Fifth and Lombard streets, . . . . .    | Philadelphia.       |
| Ott, George A., . . . . .        | Bangor, . . . . .                       | Northampton county. |
| Ott, Peter G., . . . . .         | Bangor, . . . . .                       | Northampton county. |
| Ottinger, Franklin, . . . . .    | Parker City, . . . . .                  | Armstrong county.   |
| Ottinger, James J., . . . . .    | Twentieth and Spruce streets, . . . . . | Philadelphia.       |
| Ottway, David B., . . . . .      | 612 Green street, . . . . .             | Philadelphia.       |
| Ouram, Charles, . . . . .        | 668 N. Fifteenth street, . . . . .      | Philadelphia.       |
| Ousey, Samuel B., . . . . .      | Clifton Heights, . . . . .              | Delaware county.    |
| Outhwaite, Charles W., . . . . . | 92 Lake street, . . . . .               | Chicago, Ill.       |
| Outman, W. H., . . . . .         | Westfield, . . . . .                    | Tioga county.       |
| Outwater, Harry E., . . . . .    | Susquehanna, . . . . .                  | Susquehanna county. |
| Over, Byron, . . . . .           | 5006 Penn avenue, . . . . .             | Pittsburgh.         |
| Over, David A., . . . . .        | 1820 Columbia avenue, . . . . .         | Philadelphia.       |
| Over, Edwin W., . . . . .        | 16 Brighton Place, . . . . .            | Allegheny.          |
| Owen, Harry P., . . . . .        | Toughkenamon, . . . . .                 | Chester county.     |
| Owens, Harold D., . . . . .      | 39 N. Twelfth street, . . . . .         | Philadelphia.       |
| Owens, William P., . . . . .     | Tyrone, . . . . .                       | Blair county.       |
| Owsley, John C., . . . . .       | Sharon, . . . . .                       | Mercer county.      |
| Paff, Adam, . . . . .            | 1322 Carson street, . . . . .           | Pittsburgh.         |
| Paff, Laurence, . . . . .        | Beaver Falls, . . . . .                 | Beaver county.      |
| Paff, William, . . . . .         | Beaver Falls, . . . . .                 | Beaver county.      |
| Painter, Albra W., . . . . .     | Waterville, . . . . .                   | Lycoming county.    |
| Painter, Thomas, . . . . .       | Muncy, . . . . .                        | Lycoming county.    |
| Painter, Wm. P. I., . . . . .    | Muncy, . . . . .                        | Lycoming county.    |
| Paisley, Winfield S., . . . . .  | New Castle, . . . . .                   | Lawrence county.    |
| Palmer, Daniel B., . . . . .     | 1341 Ridge avenue, . . . . .            | Philadelphia.       |
| Palmer, Merritt T., . . . . .    | Bart, . . . . .                         | Lancaster county.   |
| Palmer, Orrin W., . . . . .      | 431 Market street, . . . . .            | Pittsburgh.         |
| Palmer, William L., . . . . .    | 423 N. Tenth street, . . . . .          | Philadelphia.       |
| Pancoast, George W., . . . . .   | Eighth and Green streets, . . . . .     | Philadelphia.       |
| Paris, Edgar P., . . . . .       | 4740 Main street, . . . . .             | Germantown.         |
| Park, Leon M., . . . . .         | Marion, . . . . .                       | Indiana county.     |
| Park, Robert A., . . . . .       | Ridgway, . . . . .                      | Elk county.         |
| Parke, J. Richardson, . . . . .  | 240 S. Tenth street, . . . . .          | Philadelphia.       |
| Parker, A. H., . . . . .         | 803 Huntingdon street, . . . . .        | Philadelphia.       |
| Parker, John J., . . . . .       | Mahanoy City, . . . . .                 | Schuylkill county.  |

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| Farks, J. H., . . . . .         | Leechburg, . . . . .                       | Armstrong county.    |
| Parratt, Eugene X., . . . . .   | 259 Madison street, . . . . .              | Philadelphia.        |
| Parrish, C. M., . . . . .       | Eleventh av. and Fifteenth st., . . . . .  | Altoona.             |
| Parry, H. B., . . . . .         | 111 E. King street, . . . . .              | Lancaster.           |
| Parsons, Alonzo W., . . . . .   | 713 Callowhill street, . . . . .           | Philadelphia.        |
| Parsons, George L., . . . . .   | 2401 Fairmount avenue, . . . . .           | Philadelphia.        |
| Parsons, William H., . . . . .  | Lillian street, . . . . .                  | Pittsburgh.          |
| Partree, Charles, . . . . .     | 540 N. Washington avenue, . . . . .        | Scranton.            |
| Patten, Edwin W., . . . . .     | Waterford, . . . . .                       | Erie county.         |
| Patterson, James J., . . . . .  | Edenburg, . . . . .                        | Clarion county.      |
| Patterson, James L., . . . . .  | Twenty-first st. and Ridge av., . . . . .  | Philadelphia.        |
| Patterson, John A., . . . . .   | Washington, . . . . .                      | Washington county.   |
| Patterson, Robert L., . . . . . | Renfrew, . . . . .                         | Butler county.       |
| Patterson, Wm. B., . . . . .    | 677 Franklin street, . . . . .             | Williamsport.        |
| Patterson, Wm. F. R., . . . . . | Oil City, . . . . .                        | Venango county.      |
| Patton, David B., . . . . .     | Fayette City, . . . . .                    | Fayette county.      |
| Patton, John F., . . . . .      | 237 W. Market street, . . . . .            | York.                |
| Patton, John P., . . . . .      | 1922 S. Sixth street, . . . . .            | Philadelphia.        |
| Paules, John L., . . . . .      | Columbia, . . . . .                        | Lancaster county.    |
| Pauly, John A., . . . . .       | Transfer, . . . . .                        | Mercer county.       |
| Pauly, M. E., . . . . .         | Transfer, . . . . .                        | Mercer county.       |
| Paxson, Orie H., . . . . .      | Christiana, . . . . .                      | Lancaster county.    |
| Pealer, Charles E., . . . . .   | Driftwood, . . . . .                       | Cameron county.      |
| Pearce, Harry T., . . . . .     | 5156 Lancaster avenue, . . . . .           | Philadelphia.        |
| Pearce, James A., . . . . .     | Livermore, . . . . .                       | Westmoreland county. |
| Pechin, Edward V., . . . . .    | 2803 Girard avenue, . . . . .              | Philadelphia.        |
| Pechin, Jesse W., . . . . .     | 827 Spring Garden street, . . . . .        | Philadelphia.        |
| Pechin, William J., . . . . .   | Twentieth st. and Columbia ave., . . . . . | Philadelphia.        |
| Pechmann, William, . . . . .    | South Chester, . . . . .                   | Delaware county.     |
| Peck, Aulay W., . . . . .       | 1435 N. Eighteenth street, . . . . .       | Philadelphia.        |
| Peck, George W., . . . . .      | Grand Valley, . . . . .                    | Warren county.       |
| Pehle, George A., . . . . .     | Peely, . . . . .                           | Luzerne county.      |
| Pendell, Frank E., . . . . .    | 730 State street, . . . . .                | Erie.                |
| Pennepacker, P. W., . . . . .   | Towanda, . . . . .                         | Bradford county.     |
| Pennypacker, Nathan, . . . . .  | 400 N. Fifth street, . . . . .             | Philadelphia.        |
| Pennock, Edward, . . . . .      | Oxford, . . . . .                          | Chester county.      |
| Pensyl, P. H., . . . . .        | Bedford, . . . . .                         | Bedford county.      |
| Perkins, James T., . . . . .    | 307 Market street, . . . . .               | Pittsburgh.          |
| Perrenot, Emile A., . . . . .   | 717 N. Thirteenth street, . . . . .        | Philadelphia.        |
| Perry, James C., . . . . .      | 4122 Haverford avenue, . . . . .           | Philadelphia.        |
| Perry, John, . . . . .          | 230 Vine street, . . . . .                 | Philadelphia.        |
| Perrin, Elizabeth H., . . . . . | Putnam, . . . . .                          | Allegheny.           |
| Perrin, James M., . . . . .     | Putnam, . . . . .                          | Allegheny.           |
| Perse, James V., . . . . .      | Plymouth, . . . . .                        | Luzerne county.      |
| Pershing, Frank R., . . . . .   | Lebanon, . . . . .                         | Lebanon county.      |
| Peters, David A., . . . . .     | Steelton, . . . . .                        | Dauphin county.      |
| Peters, George F., . . . . .    | Mauch Chunk, . . . . .                     | Carbon county.       |
| Peters, Henry E., . . . . .     | Allentown, . . . . .                       | Lehigh county.       |
| Peters, Horatio G., . . . . .   | Bristol, . . . . .                         | Bucks county.        |
| Peterson, Melvin A., . . . . .  | 194 Federal street, . . . . .              | Allegheny.           |
| Petty, William, . . . . .       | 513 S. Main street, . . . . .              | Wilkes-Barre.        |
| Petzelt, Christopher, . . . . . | Eighth and McKean streets, . . . . .       | Philadelphia.        |
| Pfromm, Adam, . . . . .         | 233 N. Second street, . . . . .            | Philadelphia.        |
| Pfouts, William C., . . . . .   | Second and State streets, . . . . .        | Harrisburg.          |
| Phelps, D. G., . . . . .        | Smithfield, . . . . .                      | Bradford county.     |
| Phelps, Floyd E., . . . . .     | Covington, . . . . .                       | Tioga county.        |
| Phelps, John H., . . . . .      | Wyoming av. and Spruce st., . . . . .      | Scranton.            |



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| Phillips, Asa L., . . . . .        | 206 E. Water street, . . . . .         | Warren.                 |
| Phillips, Charles S., . . . . .    | Myerstown, . . . . .                   | Lebanon county.         |
| Phillips, Hugh, . . . . .          | Glenfield, . . . . .                   | Allegheny county.       |
| Phillips, Jacob C., . . . . .      | 3326 Germantown avenue, . . . . .      | Philadelphia.           |
| Phillips, Joseph K., . . . . .     | 105 Mill street, . . . . .             | Danville.               |
| Phillips, Joseph W., . . . . .     | 105 Mill street, . . . . .             | Danville.               |
| Phillips, Lehman D., . . . . .     | 1041 S. Third street, . . . . .        | Philadelphia.           |
| Phillips, Richard J., . . . . .    | 18 N. Thirty-eighth street, . . . . .  | Philadelphia.           |
| Pichel, Gustav, . . . . .          | 929 Penn avenue, . . . . .             | Scranton.               |
| Pierce, Thomas G., . . . . .       | West Chester, . . . . .                | Chester county.         |
| Pierce, William A., . . . . .      | West Chester, . . . . .                | Chester county.         |
| Pile, Gustavus, . . . . .          | 770 Passyunk avenue, . . . . .         | Philadelphia.           |
| Pinchback, P. N., . . . . .        | 1260 N. Tenth street, . . . . .        | Philadelphia.           |
| Piper, Austin C., . . . . .        | Coal Centre, . . . . .                 | Washington county.      |
| Piper, Cary, . . . . .             | Coal Centre, . . . . .                 | Washington county.      |
| Pizzo, Francis, . . . . .          | 739 S. Seventh street, . . . . .       | Philadelphia.           |
| Platt, Edwin M., . . . . .         | 800 Walnut street, . . . . .           | Philadelphia.           |
| Pleibel, Adolph W., . . . . .      | 2480 Frankford road, . . . . .         | Philadelphia.           |
| Pleibel, C. F. W., . . . . .       | 2480 Frankford road, . . . . .         | Philadelphia.           |
| Pleibel, Eugene T., . . . . .      | 2480 Frankford road, . . . . .         | Philadelphia.           |
| Pleis, Samuel, . . . . .           | 721 W. Cumberland street, . . . . .    | Philadelphia.           |
| Plotner, Henry W., . . . . .       | Wilmore, . . . . .                     | Cambria county.         |
| Plotner, William S., . . . . .     | Wilmore, . . . . .                     | Cambria county.         |
| Plough, William H., . . . . .      | 6130 Penn avenue, . . . . .            | Pittsburgh.             |
| Podolski, L. A., . . . . .         | 894 N. Sixth street, . . . . .         | Philadelphia.           |
| Poehner, Adolph A., . . . . .      | 1234 Columbia avenue, . . . . .        | Philadelphia.           |
| Poley, Frank H., . . . . .         | 8 W. Main street, . . . . .            | Norristown.             |
| Poley, Warren H., . . . . .        | 5361 Germantown avenue, . . . . .      | Philadelphia.           |
| Pollard, Augustus T., . . . . .    | 239 S. Eleventh street, . . . . .      | Philadelphia.           |
| Pollitt, Edmund, . . . . .         | 2200 Frankford avenue, . . . . .       | Philadelphia.           |
| Pollock, Harry W., . . . . .       | 250 Jackson street, . . . . .          | Allegheny.              |
| Pollock, Robert B., Jr., . . . . . | 752 S. Eighth street, . . . . .        | Philadelphia.           |
| Pomeroy, F. B., . . . . .          | Dushore, . . . . .                     | Sullivan county.        |
| Pooler, George W., . . . . .       | Greensburg, . . . . .                  | Westmoreland county.    |
| Porr, John L., . . . . .           | Manchester, . . . . .                  | York county.            |
| Porter, Calvin, . . . . .          | Alexandria, . . . . .                  | Huntingdon county.      |
| Porter, Clark B., . . . . .        | Towanda, . . . . .                     | Bradford county.        |
| Porter, Henry C., . . . . .        | Towanda, . . . . .                     | Bradford county.        |
| Porter, J. Elmer, . . . . .        | Pottstown, . . . . .                   | Montgomery county.      |
| Porter, Mary M. E., . . . . .      | Phoenixville, . . . . .                | Chester county.         |
| Porter, Moses, . . . . .           | Dawson, . . . . .                      | Fayette county.         |
| Porter, Robert M., . . . . .       | 31 W. Third street, . . . . .          | Williamsport.           |
| Porter, Samuel E., . . . . .       | Vanderbilt, . . . . .                  | Fayette county.         |
| Porter, William T., . . . . .      | Phoenixville, . . . . .                | Chester county.         |
| Potteiger, William F., . . . . .   | Fourth and Spruce streets, . . . . .   | Reading.                |
| Potter, David H., . . . . .        | 1120 Warren street, . . . . .          | Pittsburgh, South Side. |
| Potter, John D., . . . . .         | 81 Arlington avenue, . . . . .         | Pittsburgh.             |
| Potter, Robert J., . . . . .       | 1120 Warren street, . . . . .          | Pittsburgh, South Side. |
| Potts, David G., . . . . .         | 1400 N. Eighteenth street, . . . . .   | Philadelphia.           |
| Potts, George C., . . . . .        | 1101 N. Third street, . . . . .        | Harrisburg.             |
| Potts, Thomas H., . . . . .        | 823 N. Broad street, . . . . .         | Philadelphia.           |
| Potts, W. J., . . . . .            | Ligonier, . . . . .                    | Westmoreland county.    |
| Powell, Thomas P., . . . . .       | Greenville, . . . . .                  | Mercer county.          |
| Powell, William H., . . . . .      | 112 Church street, . . . . .           | Lancaster.              |
| Power, Edward S., . . . . .        | 1800 N. Fifteenth street, . . . . .    | Philadelphia.           |
| Powers, Lucius D., . . . . .       | 414 Cedar avenue, . . . . .            | Scranton.               |
| Preston, Edmund, Jr., . . . . .    | Broad and Ellsworth streets, . . . . . | Philadelphia.           |

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| Price, Elmer E., . . . .      | Corydon, . . . . .                | Warren county.        |
| Price, Thomas A., . . . .     | Bridesburg, . . . . .             | Philadelphia.         |
| Price, William C., . . . .    | Pittston, . . . . .               | Luzerne county.       |
| Prichard, James, . . . .      | Tyrone, . . . . .                 | Blair county.         |
| Prickitt, Frank W., . . . .   | Rosemont, . . . . .               | Montgomery county.    |
| Prieson, Adolph, . . . .      | Main and Vesper streets, . . . .  | Lock Haven.           |
| Pringle, Allison A., . . . .  | 192 Main street, . . . . .        | Pittsburgh, West End. |
| Pringle, William N., . . . .  | 2 Herron avenue, . . . . .        | Pittsburgh.           |
| Pritchard, Benj. E., . . . .  | McKeesport, . . . . .             | Allegheny county.     |
| Proctor, Wallace, . . . .     | 900 Lombard street, . . . . .     | Philadelphia.         |
| Proper, Walter J., . . . .    | Pleasantville, . . . . .          | Venango county.       |
| Prout, Jacob S., . . . .      | Wiconisco, . . . . .              | Dauphin county.       |
| Pryor, Frank C., . . . .      | Langhorne, . . . . .              | Bucks county.         |
| Pryor, William B. T., . . . . | Langhorne, . . . . .              | Bucks county.         |
| Pudean, Thomas A., . . . .    | Smith's Mills, . . . . .          | Clearfield county.    |
| Pullin, Alfred, . . . .       | Brisbin, . . . . .                | Clearfield county.    |
| Purdon, Thomas A., . . . .    | Tunkhannock, . . . . .            | Wyoming county.       |
| Purdon, W. N., . . . .        | Tunkhannock, . . . . .            | Wyoming county.       |
| Purdue, Frank T., . . . .     | Tyrone, . . . . .                 | Blair county.         |
| Purnell, Howard, . . . .      | Broad and Tasker streets, . . . . | Philadelphia.         |
| Pursell, Howard, . . . .      | Bristol, . . . . .                | Bucks county.         |
| Pursell, Stacey B., . . . .   | Portland, . . . . .               | Northampton county.   |
| Pyatt, Anna M., . . . .       | 627 Copeland street, . . . . .    | Pittsburgh.           |
| Pyle, P. A., . . . .          | Mount Joy, . . . . .              | Lancaster county.     |
| Pyle, Robert L., . . . .      | London Grove, . . . . .           | Chester county.       |

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| Quaintance, Rebecca D., . . . . | Churchtown, . . . . .           | Lancaster county. |
| Quigley, T. V. S., . . . .      | 509 E. Market street, . . . . . | York.             |
| Quinn, John A., . . . .         | Lansford, . . . . .             | Carbon county.    |
| Quinn, Lemuel A., . . . .       | Saint Mary's, . . . . .         | Elk county.       |
| Quinn, Wallace C., . . . .      | Saint Mary's, . . . . .         | Elk county.       |

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| Rabe, James W., . . . .        | 835 Market street, . . . . .       | Philadelphia.          |
| Rabenau, Herman, . . . .       | 112 N. Centre street, . . . . .    | Pottsville.            |
| Rabenau, J. Herman, . . . .    | 112 N. Centre street, . . . . .    | Pottsville.            |
| Radefeld, Frederick, . . . .   | Fifth and Lombard streets, . . . . | Philadelphia.          |
| Raessler, Joel G., . . . .     | Mount Carmel, . . . . .            | Northumberland county. |
| Raker, Frederick D., . . . .   | 44 Sixth street, . . . . .         | Shamokin.              |
| Ralston, George F., . . . .    | 4050 Germantown avenue, . . . .    | Philadelphia.          |
| Ralston, John C., . . . .      | Wilkinsburg, . . . . .             | Allegheny county.      |
| Ralston, Josephine M., . . . . | Wilkinsburg, . . . . .             | Allegheny county.      |
| Ramsey, James H., . . . .      | West Bridgewater, . . . . .        | Beaver county.         |
| Ramsey, James J., . . . .      | Harlansburg, . . . . .             | Lawrence county.       |
| Ramsey, Margaret E., . . . .   | Sharpsburg, . . . . .              | Allegheny county.      |
| Ranck, John W., . . . .        | 3922 Germantown avenue, . . . .    | Philadelphia.          |
| Randall, William H., . . . .   | Waterville, . . . . .              | Lycoming county.       |
| Randolph, Charles E., . . . .  | 1106 Eleventh street, . . . . .    | Altoona.               |
| Raney, Charles, . . . .        | New Castle, . . . . .              | Lawrence county.       |
| Raney, Willis, . . . .         | New Castle, . . . . .              | Lawrence county.       |
| Rankin, Alfred J., . . . .     | 40 Sixth street, . . . . .         | Pittsburgh.            |
| Rankin, George T., . . . .     | Linesville, . . . . .              | Crawford county.       |
| Rankin, Harvey, . . . .        | Elderton, . . . . .                | Armstrong county.      |
| Rankin, James R., . . . .      | Muncy, . . . . .                   | Lycoming county.       |
| Rankin, Lillie B., . . . .     | Delta, . . . . .                   | York county.           |
| Rankin, Michael M., . . . .    | Brockwayville, . . . . .           | Jefferson county.      |
| Rankin, Robert F., . . . .     | Delta, . . . . .                   | York county.           |
| Rankin, William M., . . . .    | Muncy, . . . . .                   | Lycoming county.       |

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| Ranney, Cassius W., . . .   | New Castle, . . . . .                  | Lawrence county.       |
| Ranney, Robert B., . . .    | New Castle, . . . . .                  | Lawrence county.       |
| Rapp, Frederick, . . .      | Twenty-first and Locust streets, . . . | Philadelphia.          |
| Raser, George P., . . .     | 429 Arch street, . . . . .             | Philadelphia.          |
| Raser, John B., . . .       | 154 N. Sixth street, . . . . .         | Reading.               |
| Rathmell, George M., . . .  | Brownsville, . . . . .                 | Fayette county.        |
| Rau, Eugene A., . . .       | Bethlehem, . . . . .                   | Northampton county.    |
| Rau, Robert, . . .          | Bethlehem, . . . . .                   | Northampton county.    |
| Raub, Fred. M. D., . . .    | 413 S. Third street, . . . . .         | Philadelphia.          |
| Raub, M. W., . . .          | 107 W. King street, . . . . .          | Lancaster.             |
| Raymer, William, . . .      | Beaver Falls, . . . . .                | Beaver county.         |
| Raymond, George E., . . .   | 5156 Lancaster avenue, . . . . .       | Philadelphia.          |
| Rayner, Howard L., . . .    | Seventeenth and Diamond streets, . . . | Norristown.            |
| Raysor, M. F., . . .        | 432 Market street, . . . . .           | Harrisburg.            |
| Rea, James L., . . .        | 1560 Dickson avenue, . . . . .         | Scranton.              |
| Rea, John, . . .            | 222 E. Broad street, . . . . .         | Chester.               |
| Read, Charles, . . .        | 410 Penn street, . . . . .             | Huntingdon.            |
| Read, Frederick B., . . .   | Osceola Mills, . . . . .               | Clearfield county.     |
| Read, Harry W., . . .       | 410 Penn street, . . . . .             | Huntingdon.            |
| Read, Nathaniel W., . . .   | Harmonsburg, . . . . .                 | Crawford county.       |
| Read, Thomas R., . . .      | 410 Penn street, . . . . .             | Huntingdon.            |
| Reading, Albert J., . . .   | Hatboro', . . . . .                    | Montgomery county.     |
| Reading, Emry L., . . .     | 1019 S. Second street, . . . . .       | Philadelphia.          |
| Reading, Joel S., . . .     | 1501 Christian street, . . . . .       | Philadelphia.          |
| Reading, Wm. Van D., . . .  | Marshall and Chain streets, . . .      | Norristown.            |
| Reagan, M. D., . . .        | Broadford, . . . . .                   | Fayette county.        |
| Reagan, Robert S., . . .    | Broadford, . . . . .                   | Fayette county.        |
| Reavley, George D., . . .   | 916 Parade street, . . . . .           | Erie.                  |
| Reber, Nathaniel B., . . .  | Lehighton, . . . . .                   | Carbon county.         |
| Reber, William W., . . .    | Lehighton, . . . . .                   | Carbon county.         |
| Redeker, William F., . . .  | Espy, . . . . .                        | Columbia county.       |
| Redick, John C., . . .      | 5 N. Main street, . . . . .            | Butler.                |
| Redington, Robert F., . . . | Troy, . . . . .                        | Bradford county.       |
| Redner, Thaddeus R., . . .  | 4473 Germantown avenue, . . .          | Germantown.            |
| Redsecker, Jacob H., . . .  | Lebanon, . . . . .                     | Lebanon county.        |
| Reed, Andrew B., . . .      | 1438 Capouse avenue, . . . . .         | Scranton.              |
| Reed, Charles E., . . .     | Zelienople, . . . . .                  | Butler county.         |
| Reed, Frederick M., . . .   | South Chester, . . . . .               | Delaware county.       |
| Reed, Joseph H., . . .      | 302 State street, . . . . .            | Sharon.                |
| Reed, Kenneth H., . . .     | Gallitzin, . . . . .                   | Cambria county.        |
| Reed, Raymond E., . . .     | 1539 N. Third street, . . . . .        | Harrisburg.            |
| Reed, Uriah, . . .          | Jersey Shore, . . . . .                | Lycoming county.       |
| Reed, William H., . . .     | Camden, . . . . .                      | Allegheny county.      |
| Reed, Willoughby H., . . .  | Norristown, . . . . .                  | Montgomery county.     |
| Reeder, Milton T., . . .    | Millersville, . . . . .                | Lancaster county.      |
| Reese, David J., . . .      | 503 Franklin street, . . . . .         | Philadelphia.          |
| Reese, David J., . . .      | Renovo, . . . . .                      | Clinton county.        |
| Reese, John W., . . .       | Taylorville, . . . . .                 | Lackawanna county.     |
| Reeser, Dennis A., . . .    | Shamokin, . . . . .                    | Northumberland county. |
| Reeser, T. Howard, . . .    | 337 Cattell street, . . . . .          | Easton.                |
| Reichard, Alonzo A., . . .  | Sharpsville, . . . . .                 | Mercer county.         |
| Reichel, Edward B., . . .   | 830 Chestnut street, . . . . .         | Philadelphia.          |
| Reichenbacker, F. C., . . . | Honesdale, . . . . .                   | Wayne county.          |
| Reichert, Hannah A., . . .  | Kittanning, . . . . .                  | Armstrong county.      |
| Reichert, Henry B., . . .   | Kittanning, . . . . .                  | Armstrong county.      |
| Reichert, John E., . . .    | Kittanning, . . . . .                  | Armstrong county.      |
| Reid, John C., . . .        | Clarion, . . . . .                     | Clarion county.        |

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|--------------------------|---------------------------------------------|------------------------|
| Reider, Edwin S., . . .  | 1200 W. Fourth street, . . . . .            | Williamsport.          |
| Reighter, Frank C., . .  | Main and Penn streets, . . . . .            | Germantown.            |
| Reiher, John, . . . . .  | 3601 Butler street, . . . . .               | Pittsburgh.            |
| Reimann, Louis P., . .   | 941 N. Sixth street, . . . . .              | Philadelphia.          |
| Reimensnyder, M. F., .   | 24 N. Fourth street, . . . . .              | Sunbury.               |
| Reimensnyder, M. V., .   | 24 N. Fourth street, . . . . .              | Sunbury.               |
| Reinhard, Charles, . .   | Verona, . . . . .                           | Allegheny county.      |
| Reinhold, Simon, . . .   | 930 Elm street, . . . . .                   | Reading.               |
| Reisert, William, . . .  | Bridesburg, . . . . .                       | Philadelphia.          |
| Reizenstein, Albert G.,  | 353 Beaver avenue, . . . . .                | Allegheny.             |
| Remig, Frederick G., .   | 824 S. Twelfth street, . . . . .            | Philadelphia.          |
| Remington, Joseph P.,    | 1233 Walnut street, . . . . .               | Philadelphia.          |
| Renn, Philip H., . . .   | Sunbury, . . . . .                          | Northumberland county. |
| Reno, William N., . . .  | Spartansburg, . . . . .                     | Crawford county.       |
| Renshaw, Thomas W.,      | Tamaqua, . . . . .                          | Schuylkill county.     |
| Renting, Theodore W.,    | Titusville, . . . . .                       | Crawford county.       |
| Rentschler, Chas., Jr.,  | 942 Penn street, . . . . .                  | Reading.               |
| Rentzel, Elmer E., . .   | Manayunk, . . . . .                         | Philadelphia.          |
| Resser, T. C., . . . . . | Waynesboro', . . . . .                      | Franklin county.       |
| Reuss, William, . . . .  | 511 S. Second street, . . . . .             | Philadelphia.          |
| Rewalt, John W., . . .   | Middletown, . . . . .                       | Dauphin county.        |
| Rex, Joseph, . . . . .   | Devon, . . . . .                            | Chester county.        |
| Reynolds, Avery W., . .  | 406 Main street, . . . . .                  | Carbondale.            |
| Reynolds, John B., . .   | 2300 Amber street, . . . . .                | Philadelphia.          |
| Reynolds, J. M. C., . .  | South Strabane, . . . . .                   | Washington county.     |
| Reynolds, Samuel, . . .  | Reynoldsville, . . . . .                    | Jefferson county.      |
| Reynolds, Walter, . . .  | 1508 Ellsworth street, . . . . .            | Philadelphia.          |
| Reynolds, William D.,    | Mahanoy City, . . . . .                     | Schuylkill county.     |
| Rheese, George J., . . . | Smithport, . . . . .                        | Indiana county.        |
| Rhoades, Stephen H., .   | Pittston, . . . . .                         | Luzerne county.        |
| Rhoades, William S., .   | Philipsburg, . . . . .                      | Centre county.         |
| Rhodes, Charles R., . .  | 467 E. Girard avenue, . . . . .             | Philadelphia.          |
| Rhodes, E. M., . . . .   | Mount Union, . . . . .                      | Huntingdon county.     |
| Rhodes, John W., . . .   | Riceville, . . . . .                        | Crawford county.       |
| Rhodes, Josiah, . . . .  | Jefferson, . . . . .                        | Greene county.         |
| Rhodes, W. R., . . . .   | Columbus, . . . . .                         | Warren county.         |
| Rice, D. Eldredge, . . . | 625 S. Sixteenth street, . . . . .          | Philadelphia.          |
| Rice, Fred W., . . . .   | Rome, . . . . .                             | Bradford county.       |
| Rice, Willard M., Jr., . | 5102 Germantown avenue, . . . . .           | Philadelphia.          |
| Rice, William, . . . . . | Rome, . . . . .                             | Bradford county.       |
| Richard, Jay S., . . . . | Pymatuning, . . . . .                       | Mercer county.         |
| Richards, Alfred N., . . | 511 Canal street, . . . . .                 | South Easton.          |
| Richardson, Alick G., .  | Webster avenue and Robert street, . . . . . | Pittsburgh.            |
| Richardson, Eugene M.,   | New Castle, . . . . .                       | Lawrence county.       |
| Riche, Walter A., . . .  | Gilberton, . . . . .                        | Schuylkill county.     |
| Richey, Elisha C., . . . | Latrobe, . . . . .                          | Westmoreland county.   |
| Richter, Gustave A., . . | 801 S. Front street, . . . . .              | Philadelphia.          |
| Ridgway, Charles A., . . | Hydetown, . . . . .                         | Crawford county.       |
| Ridgway, Lemuel A., . .  | Mansfield, . . . . .                        | Tioga county.          |
| Ridpath, John W., . . .  | Jenkindtown, . . . . .                      | Montgomery county      |
| Riesenman, John, . . .   | Franklin, . . . . .                         | Venango county.        |
| Riesenman, Joseph . . .  | Franklin, . . . . .                         | Venango county.        |
| Riegeluth, Conrad, . . . | Sayre, . . . . .                            | Bradford county.       |
| Riggs, Charles N., . . . | 1416 Walnut street, . . . . .               | Philadelphia.          |
| Riley, Charles T., . . . | West Bridgewater, . . . . .                 | Beaver county. .       |
| Ringler, George P., . .  | 1800 Passyunk avenue, . . . . .             | Philadelphia.          |
| Rinker, William H., . .  | 2111 N. Eighth street, . . . . .            | Philadelphia.          |



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|------------------------------|---------------------------------------------|---------------------|
| Rintels, D. Wallace, . . .   | 3338 Walnut street, . . . . .               | Philadelphia.       |
| Riott, Lawrence F., . . .    | 4010 Butler street, . . . . .               | Pittsburgh.         |
| Rishell, John D., . . .      | 541 E. Thompson street, . . . . .           | Philadelphia.       |
| Risher, John McC., . . .     | Shire Oaks, . . . . .                       | Washington county.  |
| Rising, John H., . . .       | DuBois, . . . . .                           | Clearfield county.  |
| Ritchey, V. H., . . .        | Carlisle, . . . . .                         | Cumberland county.  |
| Ritenour, J. Kid., . . .     | Uniontown, . . . . .                        | Fayette county.     |
| Rittenhouse, Henry, . . .    | 1637 Ridge avenue, . . . . .                | Philadelphia.       |
| Ritter, Frederick D., . . .  | Gaines, . . . . .                           | Tioga county.       |
| Ritter, Fred'k H. S., . . .  | Gaines, . . . . .                           | Tioga county.       |
| Ritter, James W., . . .      | White Pine, . . . . .                       | Lycoming county.    |
| Ritter, Norman G., . . .     | Emerald and Cumberland streets, . . . . .   | Philadelphia.       |
| Ritz, Charles M., . . .      | Lewistown, . . . . .                        | Mifflin county.     |
| Ritz, W. W., . . .           | Eighth avenue and Ninth street, . . . . .   | Altoona.            |
| Robarts, John O. K., . . .   | Phoenixville, . . . . .                     | Chester county.     |
| Robbins, Alonzo, . . .       | Eleventh and Vine streets, . . . . .        | Philadelphia.       |
| Roberts, Alma A., . . .      | Mill Village, . . . . .                     | Erie county.        |
| Roberts, Charles H., . . .   | 4441 Frankford avenue, . . . . .            | Philadelphia.       |
| Roberts, Chas. H. B., . . .  | 1307 N. Twenty-fourth street, . . . . .     | Philadelphia.       |
| Roberts, George L., . . .    | 66 N. Main street, . . . . .                | Washington.         |
| Roberts, George W., . . .    | Washington, . . . . .                       | Washington county.  |
| Roberts, Hugh M., . . .      | Jackson, . . . . .                          | Susquehanna county. |
| Roberts, Joseph C., . . .    | Coatesville, . . . . .                      | Chester county.     |
| Roberts, Lee, . . .          | Broad street and Girard avenue, . . . . .   | Philadelphia.       |
| Roberts, Ray F., . . .       | Jackson, . . . . .                          | Susquehanna county. |
| Roberts, Wilbert D., . . .   | 66 N. Main street, . . . . .                | Washington.         |
| Robertson, Arch. C., . . .   | . . . . .                                   | Pittsburgh.         |
| Robertson, Henry E., . . .   | 3207 N. Seventeenth street, . . . . .       | Philadelphia.       |
| Robins, Howard G., . . .     | 435 N. Tenth street, . . . . .              | Philadelphia.       |
| Robins, Mrs. Kate E., . . .  | 71 Sunbury street, . . . . .                | Shamokin.           |
| Robinson, Bert B., . . .     | Bradford, . . . . .                         | McKean county.      |
| Robinson, Charles M., . . .  | 4545 Frankford avenue, . . . . .            | Philadelphia.       |
| Robinson, David S., . . .    | Saltsburg, . . . . .                        | Indiana county.     |
| Robinson, Harry H., . . .    | Saltsburg, . . . . .                        | Indiana county.     |
| Robinson, Hayden W., . . .   | Brownsville, . . . . .                      | Fayette county.     |
| Robinson, Robert, . . .      | East Brady, . . . . .                       | Clarion county.     |
| Robinson, William C., . . .  | Saltsburg, . . . . .                        | Indiana county.     |
| Robinson, William H., . . .  | Pottsville, . . . . .                       | Schuylkill county.  |
| Robison, Morris B., . . .    | Mahonington, . . . . .                      | Lawrence county.    |
| Robison, William E., . . .   | Beallsville, . . . . .                      | Washington county.  |
| Rocap, William A., . . .     | Olney, . . . . .                            | Philadelphia.       |
| Roche, Edward M., Jr., . . . | 1701 South street, . . . . .                | Philadelphia.       |
| Roche, James H., . . .       | Bradford, . . . . .                         | McKean county.      |
| Roche, William F., . . .     | Fifteenth and South streets, . . . . .      | Philadelphia.       |
| Rockwell, Hiram C., . . .    | Emporium, . . . . .                         | Cameron county.     |
| Rockwell, John L., . . .     | New Albany, . . . . .                       | Bradford county.    |
| Rockwell, Margaret A., . . . | Emporium, . . . . .                         | Cameron county.     |
| Rodgers, John R., . . .      | Hoguestown, . . . . .                       | Cumberland county.  |
| Rodgers, William H., . . .   | Mifflintown, . . . . .                      | Juniaata county.    |
| Rodman, George F., . . .     | Hawley, . . . . .                           | Wayne county.       |
| Rodman, James T., . . .      | Hawley, . . . . .                           | Wayne county.       |
| Roe, Edward J., . . .        | 1255 Mulberry street, . . . . .             | Harrisburg.         |
| Roe, Francis M., . . .       | 1255 Mulberry street, . . . . .             | Harrisburg.         |
| Roebuck, John H., . . .      | 95 S. Main street, . . . . .                | Bethlehem.          |
| Roedel, William R., . . .    | 2148 Green street, . . . . .                | Philadelphia.       |
| Roeder, Jonas E., . . .      | Twenty-second and Jefferson sts., . . . . . | Philadelphia.       |
| Rogers, Franklin P., . . .   | West Chester, . . . . .                     | Chester county.     |

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|--------------------------|------------------------------------|----------------------|
| Rogers, Hannah E., . . . | Alden Station, . . . . .           | Luzerne county.      |
| Rogers, John T., . . .   | Waynesburg, . . . . .              | Greene county.       |
| Rogers, Oswald, . . .    | Alden Station, . . . . .           | Luzerne county.      |
| Rogers, William B., . .  | Jefferson, . . . . .               | Greene county.       |
| Rohn, Peter S., . . .    | Fourth and New streets, . . . .    | Bethlehem.           |
| Rohrer, George S., . .   | Kittanning, . . . . .              | Armstrong county.    |
| Rohrer, Howard, . . .    | 50 E. Orange street, . . . . .     | Lancaster.           |
| Rohrer, Thaddeus M., .   | Quarryville, . . . . .             | Lancaster county.    |
| Roland, A. C., . . .     | Wellsboro', . . . . .              | Tioga county.        |
| Roland, George W., . .   | South Bethlehem, . . . . .         | Northampton county.  |
| Rolf, Julius, . . .      | Morrisville, . . . . .             | Bucks county.        |
| Romberg, Frederick, .    | 430 N. Ninth street, . . . . .     | Philadelphia.        |
| Rommel, Jacob M., . .    | 835 Market street, . . . . .       | Philadelphia.        |
| Rooker, Hermann S., .    | Edwardsville, . . . . .            | Luzerne county.      |
| Root, William G., . .    | Morrisdale, . . . . .              | Clearfield county,   |
| Rorer, Jonathan T., . .  | Hatboro', . . . . .                | Montgomery county.   |
| Rosboro, Frank H., . .   | Dawson, . . . . .                  | Fayette county.      |
| Rosenberger, E. S., . .  | 2002 Tioga street, . . . . .       | Philadelphia.        |
| Rosenberger, Wm. D., .   | Seventh and Dauphin streets, . .   | Philadelphia.        |
| Rosenstock, Louis, . .   | 2800 Gray's Ferry road, . . . . .  | Philadelphia.        |
| Ross, Charles S., . . .  | Mansfield, . . . . .               | Tioga county.        |
| Ross, David H., . . .    | 2567 E. Norris street, . . . . .   | Philadelphia.        |
| Ross, David W., . . .    | 2167 E. Cumberland street, . . . . | Philadelphia.        |
| Ross, Eben J., . . .     | 231 N. Twelfth street, . . . . .   | Philadelphia.        |
| Ross, Edward E., . . .   | Luzerne, . . . . .                 | Luzerne county.      |
| Ross, George R., . . .   | Lebanon, . . . . .                 | Lebanon county.      |
| Ross, H. Frank, . . .    | Russellville, . . . . .            | Chester county.      |
| Ross, Hugh H., . . .     | 100-N. Thirteenth street, . . . .  | Philadelphia.        |
| Ross, James F., . . .    | 2167 E. Cumberland street, . . . . | Philadelphia.        |
| Ross, Jesse L., . . .    | Waynesburg, . . . . .              | Greene county.       |
| Ross, John P., . . .     | Kennett Square, . . . . .          | Chester county.      |
| Ross, Mary J., . . .     | Elizabethtown, . . . . .           | Lancaster county     |
| Ross, R. S., . . .       | Elizabethtown, . . . . .           | Lancaster county.    |
| Ross, William H., . .    | North East, . . . . .              | Erie county.         |
| Ross, William R., . .    | Lebanon, . . . . .                 | Lebanon county.      |
| Ross, Wint. B., . . .    | Cambridgeboro', . . . . .          | Crawford county.     |
| Roth, Samuel G. J., . .  | 35 N. Twelfth street, . . . . .    | Philadelphia.        |
| Rothrock, D. R., . . .   | New Berlin, . . . . .              | Union county.        |
| Rothrock, Marand, . .    | Fremont, . . . . .                 | Snyder county.       |
| Rott, Louis, . . .       | Homestead, . . . . .               | Allegheny county.    |
| Rottner, Charles S., . . | 1202 N. Fifth street, . . . . .    | Philadelphia.        |
| Rottner, Pauline E., . . | 1202 N. Fifth street, . . . . .    | Philadelphia.        |
| Rourke, Michael J., . .  | Sixth and Vine streets, . . . . .  | Philadelphia.        |
| Rowand, A. H. C., . . .  | 3629 Haverford avenue, . . . . .   | Philadelphia.        |
| Rowand, Mary E., . . .   | 3629 Haverford avenue, . . . . .   | Philadelphia.        |
| Rowe, William C., . . .  | Fernwood, . . . . .                | Delaware county.     |
| Rowse, Thomas J., . .    | Tamaqua, . . . . .                 | Schuylkill county.   |
| Roydot, Athanase, . .    | Eighth and Vine streets, . . . .   | Philadelphia.        |
| Royer, George S., . . .  | Ephrata, . . . . .                 | Lancaster county.    |
| Ruan, James, . . .       | 1328 E. Susquehanna avenue, . . .  | Philadelphia.        |
| Rudolph, John M., . .    | 1840 S. Tenth street, . . . . .    | Philadelphia.        |
| Rudy, Jacob A., . . .    | 206 S. Queen street, . . . . .     | York.                |
| Rudy, Martin, . . .      | 439 S. Queen street, . . . . .     | Lancaster.           |
| Ruegenberg, John M., .   | 3621 Girard avenue, . . . . .      | Philadelphia.        |
| Ruff, Jennie H., . . .   | Ruff's Dale, . . . . .             | Westmoreland county. |
| Ruff, Quincy A., . . .   | Ruff's Dale, . . . . .             | Westmoreland county. |
| Ruhl, Harry F., . . .    | Sixteenth and Brown streets, . . . | Philadelphia.        |

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|---------------------------|------------------------------------|------------------------|
| Rumsey, Walter A., . . .  | 550 N. Tenth street, . . . . .     | Philadelphia.          |
| Russel, Jacob P., . . .   | Branchtown, . . . . .              | Philadelphia.          |
| Russell, J. Ephraim, . .  | West Sunbury, . . . . .            | Butler county.         |
| Russell, Thomas J., . .   | North Clarendon, . . . . .         | Warren county.         |
| Russell, William C., . .  | East Warren, . . . . .             | Warren county.         |
| Russell, W. M., . . .     | Canonsburg, . . . . .              | Washington county.     |
| Rutherford, Chas. A., . . | 340 S. Tenth street, . . . . .     | Philadelphia.          |
| Rutherford, Frank P., .   | 1501 Christian street, . . . . .   | Philadelphia.          |
| Ryan, David S., . . .     | 102 S. Main avenue, . . . . .      | Scranton.              |
| Ryan, Frank G., . . .     | 506 N. Thirty-second street, . . . | Philadelphia.          |
| Ryan, George W., . . .    | 506 N. Thirty-second street, . . . | Philadelphia.          |
| Ryckman, Levi M., . .     | Boyle, . . . . .                   | Westmoreland county.   |
|                           |                                    |                        |
| Saalfrank, Charles W., .  | 1233 Poplar street, . . . . .      | Philadelphia.          |
| Saegar, George C., . . .  | Montoursville, . . . . .           | Lycoming county.       |
| Sager, E. S., . . . . .   | Smithton, . . . . .                | Westmoreland county.   |
| Sample, George W., . .    | 3 E. Market street, . . . . .      | York.                  |
| Sampsel, James W., . .    | Penn's Creek, . . . . .            | Snyder county.         |
| Samuel, Edmund W., . .    | Mount Carmel, . . . . .            | Northumberland county. |
| Sandborn, William H., .   | North East, . . . . .              | Erie county.           |
| Sanderson, Fitz Allen, .  | 700 N. Forty-fifth street, . . . . | Philadelphia.          |
| Sanderson, Henry C., .    | Bradford, . . . . .                | McKean county.         |
| Sanderson, John T., . .   | Tenth and Ellsworth streets, . .   | Philadelphia.          |
| Sands, Frank E., . . .    | Hallstead, . . . . .               | Susquehanna county.    |
| Sands, J. Seldon, . . .   | Tullytown, . . . . .               | Bucks county.          |
| Sands, William H., . .    | 146 N. Tenth street, . . . . .     | Philadelphia.          |
| Sandt, George L., . . .   | Brookville, . . . . .              | Jefferson county.      |
| Sandt, Joseph P., . . .   | 401 Northampton street, . . . .    | Easton.                |
| Sapp, Frank W., . . .     | Dagus Mines, . . . . .             | Elk county.            |
| Sargent, John H., . . .   | 1443 S. Broad street, . . . . .    | Philadelphia.          |
| Sarver, Oliver C., . . .  | Greensburg, . . . . .              | Westmoreland county.   |
| Satterlee, M. D., . . .   | Hartstown, . . . . .               | Crawford county.       |
| Sauer, Albert H., . . .   | 98 Chestnut street, . . . . .      | Allegheny.             |
| Saurer, William H., . .   | 800 McKean street, . . . . .       | Philadelphia.          |
| Sawhill, Alexander F., .  | 187 Federal street, . . . . .      | Allegheny.             |
| Sawhill, David F., . . .  | 225 Fifth avenue, . . . . .        | Pittsburgh.            |
| Sawhill, Wesley W., . .   | 225 Fifth avenue, . . . . .        | Pittsburgh.            |
| Saxton, William K., . .   | Jersey Shore, . . . . .            | Lycoming county.       |
| Saylor, Albert R., . . .  | Royer's Ford, . . . . .            | Montgomery county.     |
| Saylor, Hattie E., . . .  | Royer's Ford, . . . . .            | Montgomery county.     |
| Scattergood, Caleb, . .   | 1610 N. Seventeenth street, . . .  | Philadelphia.          |
| Schaak, Milton F., . . .  | 1425 Vine street, . . . . .        | Philadelphia.          |
| Schad, Otto A., . . . .   | 234 Ohio street, . . . . .         | Allegheny.             |
| Schaefer, Adolph, . . .   | 1413 Dickinson street, . . . . .   | Philadelphia.          |
| Schaefer, Emil A., . . .  | 380 Fifth avenue, . . . . .        | Pittsburgh.            |
| Schaeffle, Charles C., .  | Lock Haven, . . . . .              | Clinton county.        |
| Schaffle, S. W. W., . .   | Lewisburg, . . . . .               | Union county.          |
| Schaich, Anthony, . . .   | 904 Chestnut street, . . . . .     | Reading.               |
| Schandein, Harry, . . .   | 106 Market street, . . . . .       | Philadelphia.          |
| Scheffler, James S., . .  | Pen Argyl, . . . . .               | Northampton county.    |
| Scherer, Frederick, . .   | 404 Webster avenue, . . . . .      | Pittsburgh.            |
| Schimminger, Geo. W., .   | 709 E. Twelfth street, . . . . .   | Altoona.               |
| Schindel, Harry E., . .   | 4099 Lancaster avenue, . . . . .   | Philadelphia.          |
| Schirmer, William G., .   | 214 Smithfield street, . . . . .   | Pittsburgh.            |
| Schlager, Walter L., . .  | Moosic, . . . . .                  | Lackawanna county.     |
| Schlegel, E. F., . . .    | 501 S. Seventh street, . . . . .   | Philadelphia.          |
| Schlemm, Chas. W. G., .   | 25 N. Sixth street, . . . . .      | Reading.               |

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|-------------------------|---------------------------------|---------------------|
| Schloboch, Cyrus L.,    | Easton,                         | Northampton county. |
| Schlosser, John W.,     | Third and Broad streets,        | Harrisburg.         |
| Schlott, Arthur C. V.,  | 627 Smithfield street,          | Pittsburgh.         |
| Schmidt, Adolph,        | McKeesport,                     | Allegheny county.   |
| Schmidt, George W.,     | 1801 Penn avenue,               | Pittsburgh.         |
| Schmidt, Henry,         | 1729 S. Second street,          | Philadelphia.       |
| Schmidt, Lewis F.,      | 537 Hamilton street,            | Allentown.          |
| Schmidt, Rosaline O.,   | 1729 S. Second street,          | Philadelphia.       |
| Schminky, Allen B.,     | Lykens,                         | Dauphin county.     |
| Schneider, John,        | 410 Cambria street,             | Philadelphia.       |
| Schneider, Matthias M., |                                 | Pittsburgh.         |
| Schoales, Marcus A.,    | 619 York street,                | Philadelphia.       |
| Schock, Frederick A.,   | 1906 N. Eighteenth street,      | Philadelphia.       |
| Schoenberger, August,   | Ashland,                        | Schuylkill county.  |
| Schoff, J. John,        | 102 S. George street,           | York.               |
| Schofield, Allen C.,    | 1451 N. Thirteenth street,      | Philadelphia.       |
| Scholl, B. Frank,       | 301 N. Tenth street,            | Philadelphia.       |
| Schools, George W.,     | 355 N. Ninth street,            | Lebanon.            |
| Schoonmaker, I. R.,     | Ulster,                         | Bradford county.    |
| Schreiber, John D.,     | 134 N. Seventh street,          | Allentown.          |
| Schreiber, Philip H.,   | 3 E. Market street,             | York.               |
| Schriner, John F.,      | New Holland,                    | Lancaster county.   |
| Schroeder, Luther J.,   | Columbia,                       | Lancaster county.   |
| Schroster, Hermann N.,  | 225 Oxford street,              | Philadelphia.       |
| Schrum, Charles A.,     | Du Bois,                        | Clearfield county.  |
| Schuenemann, Otto,      | 2233 Nassau street,             | Philadelphia.       |
| Schultz Albert,         | 1514 Ash street,                | Scranton.           |
| Schultz, John H.,       | Dauphin,                        | Dauphin county.     |
| Schwank, Anthony A.,    | 305 Cherry street,              | Philadelphia.       |
| Schwarm, Charles,       | 1707 Carson street,             | Pittsburgh.         |
| Schwartz, Frederick,    | German Hospital,                | Philadelphia.       |
| Schwartz, Thomas M.,    | 112 Orchard Place,              | Pittsburgh.         |
| Schweitzer, Henry B.,   | 233 Centre avenue,              | Pittsburgh.         |
| Schweppe, H. L.,        | New Brighton,                   | Beaver county.      |
| Scott, Alexander M.,    | Camden,                         | Allegheny count     |
| Scott, J. Harry,        | 1829 N. Eighth street,          | Philadelphia.       |
| Scott, Robert,          | Seventh st. and Montgomery av., | Philadelphia.       |
| Scott, Theodore,        | 512 N. Thirty-sixth street,     | Philadelphia.       |
| Scott, William J.,      | 2300 E. York street,            | Philadelphia.       |
| Scouller, Annie,        | Newville,                       | Cumberland county.  |
| Serafford, Charles O.,  | Edinboro',                      | Erie county.        |
| Seramm, Daniel, Jr.,    | 2433 Brown street,              | Philadelphia.       |
| Seureman, Joseph B.,    | Nanticoke,                      | Luzerne county.     |
| Seabold, William S.,    | Annaville,                      | Lebanon county.     |
| Seaman, Cornelius,      | 2954 Richmond street,           | Philadelphia.       |
| Sears, Roger W.,        | Honesdale,                      | Wayne county.       |
| Seary, William N.,      | 318 Bainbridge street,          | Philadelphia.       |
| Sechler, Harman M.,     | 201 Mill street,                | Danville.           |
| Seeler, Andrew J.,      | 1900 Pine street,               | Philadelphia.       |
| Seeley, Hosea F.,       | 2401 Fairmount avenue,          | Philadelphia.       |
| Seely, M. B.,           | Nelson,                         | Tioga county.       |
| Segrest, Lewis F.,      | 2369 E. Cumberland street,      | Philadelphia.       |
| Seiler, William F.,     | 722 Wood street,                | Philadelphia.       |
| Seiple, Leidy,          | 876 N. Fourth street,           | Philadelphia.       |
| Seiss, Raymond S.,      | Littlestown,                    | Adams county.       |
| Seither, Charles A.,    | 528 Arch street,                | Philadelphia.       |
| Seitz, Frederick,       | 230 N. Twenty-second street,    | Philadelphia.       |



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| Sellers, Elmer J., . . .   | Kutztown, . . . . .                 | Berks county.           |
| Sellers, S. M., . . . .    | Eighth av. and Fifteenth st., . . . | Altoona.                |
| Sellers, William H., . .   | Tyrone, . . . . .                   | Blair county.           |
| Seltzer, Charles J., . . . | Coatesville, . . . . .              | Chester county.         |
| Semple, Henry B., . . .    | Banks and Northampton streets, .    | Easton.                 |
| Semple, Joseph G., . . .   | Banks and Northampton streets, .    | Easton.                 |
| Semple, W. O., . . . .     | Banks and Northampton streets, .    | Easton.                 |
| Senderling, C. H., . . .   | 1730 Frankford avenue . . . . .     | Philadelphia.           |
| Senecal, Edward W., . .    | 433 Ferry street, . . . . .         | Easton.                 |
| Serfass, A. Lincoln, . .   | Third and Bushkill streets, . . .   | Easton.                 |
| Sergeant, Jackson, . . .   | West Chester, . . . . .             | Chester county.         |
| Server, Oliver B., . . .   | 301 N. Sixth street, . . . . .      | Philadelphia.           |
| Shade, Daniel S., . . .    | Royer's Ford, . . . . .             | Montgomery county.      |
| Shaeffer, William J., . .  | 1427 E. Susquehanna avenue, . . .   | Philadelphia.           |
| Shafer A. P. H., . . . .   | 159 Fourth avenue, . . . . .        | Pittsburgh.             |
| Shafer, J. Adolph, . . .   | 742 W. Carson street, . . . . .     | Pittsburgh, South Side. |
| Shaffer, Charles H., . .   | Elizabeth, . . . . .                | Allegheny county.       |
| Shaffer, John S., . . .    | Elizabeth, . . . . .                | Allegheny county.       |
| Shaner, Jacob D., . . .    | Suterville, . . . . .               | Westmoreland county.    |
| Shannon, Hamilton H., .    | Beaver Falls, . . . . .             | Beaver county.          |
| Shannon, William A., .     | Mercersburg, . . . . .              | Franklin county.        |
| Sharp, Edward W., . . .    | 2802 Richmond street, . . . . .     | Philadelphia.           |
| Sharp, John M., . . . .    | 2542 Richmond street, . . . . .     | Philadelphia.           |
| Sharp, Otis S., . . . .    | Dayton, . . . . .                   | Armstrong county.       |
| Sharp, Robert J., . . .    | Austin, . . . . .                   | Potter county.          |
| Sharpless, Ambrose H., .   | Catawissa, . . . . .                | Columbia county.        |
| Sharpless, Charles C., .   | Catawissa, . . . . .                | Columbia county.        |
| Shaw, Henry B., . . . .    | 4764 Frankford avenue, . . . . .    | Philadelphia.           |
| Shaw, John F., . . . .     | Girardville, . . . . .              | Schuylkill county,      |
| Sheafer, E. Parks, . . .   | 107 N. George street, . . . . .     | York.                   |
| Shearer, Alfred L., . . .  | Duncannon, . . . . .                | Perry county.           |
| Shearer, Niles H., . . .   | Eighth and George streets, . . .    | York.                   |
| Sheenan, R. Y., . . . .    | Mehoopany, . . . . .                | Wyoming county.         |
| Shneetz, Henry W., . . .   | South Bethlehem, . . . . .          | Northampton county.     |
| Shelar, J. W., . . . . .   | Stoners, . . . . .                  | Westmoreland county.    |
| Shelley, A. W., . . . .    | 62 N. Washington street, . . . .    | Wilkes-Barre.           |
| Shelley, Jacob A., . . .   | Mechanicsburg, . . . . .            | Cumberland county.      |
| Shenkel, Michael R., . .   | Phoenixville, . . . . .             | Chester county.         |
| Shepley, Charles H., . .   | 51 Anderson street, . . . . .       | Allegheny.              |
| Shepley, Howard P., . .    | Blairsville, . . . . .              | Indiana county.         |
| Sher, Frank P., . . . .    | 1813 S. Sixth street, . . . . .     | Philadelphia.           |
| Sheridan, Joseph H., . .   | South Bethlehem, . . . . .          | Northampton county.     |
| Sheriff, William W., . .   | 139 W. Fourth street, . . . . .     | Williamsport.           |
| Sherman, Joseph B., . .    | Bristol, . . . . .                  | Bucks county.           |
| Shields, Joseph, . . . .   | Punxsutawney, . . . . .             | Jefferson county.       |
| Shindel, J. G. L., . . .   | Selinsgrove, . . . . .              | Snyder county.          |
| Shingle, George W., . . .  | 600 N. Eleventh street, . . . . .   | Philadelphia.           |
| Shingle, Samuel H., . . .  | Nineteenth and Jefferson streets, . | Philadelphia.           |
| Shinn, Howard G., . . .    | 1339 N. Fifteenth street, . . . . . | Philadelphia.           |
| Shinn, James T., . . . .   | 1400 Spruce street, . . . . .       | Philadelphia.           |
| Shipley, Ewing H., . . .   | Waynesburg, . . . . .               | Greene county.          |
| Shissler, A. G., . . . .   | Shamokin, . . . . .                 | Northumberland county.  |
| Shissler, Henry A., . . .  | Shamokin, . . . . .                 | Northumberland county.  |
| Shive, Peter C., . . . .   | Plainsville, . . . . .              | Luzerne county.         |
| Shiveley, Frederick B., .  | Fayetteville, . . . . .             | Franklin county.        |

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| Shively, George G.      | Waynesboro',                  | Franklin county.     |
| Shivers, Charles,       | Seventh and Spruce streets,   | Philadelphia.        |
| Shivers, Charles, Jr.,  | Seventh and Spruce streets,   | Philadelphia.        |
| Shober, Alphonse,       | 299 Ohio street,              | Allegheny.           |
| Shocklin, Frank P.,     | 541 E. Thompson street,       | Philadelphia.        |
| Shoemaker, Benj., Jr.,  | Eighth and Spruce streets,    | Philadelphia.        |
| Shoemaker, Ellery B.,   | Ambler,                       | Montgomery county.   |
| Shoemaker, George W.,   | 722 Hamilton street,          | Allentown.           |
| Shomberg, Albert F.,    | 1209 Sixteenth street,        | Altoona.             |
| Shookers, Tobias S.,    | Mountville,                   | Lancaster county.    |
| Shope, Jacob,           | Hummelstown,                  | Dauphin county.      |
| Shorb, E. F.,           | Littlestown,                  | Adams county.        |
| Short, William H.,      | Ardmore,                      | Montgomery county.   |
| Showalter, Wm. A., Jr., | Latrobe,                      | Westmoreland county. |
| Shrieves, Charles D.,   | 1422 S. Thirteenth street,    | Philadelphia.        |
| Shrimplin, Larimer D.,  | 300 Frankstown avenue,        | Pittsburgh.          |
| Shrom, Charles B.,      | Greenville,                   | Mercer county.       |
| Shrom, Henry N.,        | Greenville,                   | Mercer county.       |
| Shryer, Clarence R.,    | 320 N. Main avenue,           | Scranton.            |
| Shryock, Allen,         | 1129 Mt. Vernon street,       | Philadelphia.        |
| Shugar, William G.,     | Lebanon,                      | Lebanon county.      |
| Shuler, Lewis I.,       | Pottstown,                    | Montgomery county.   |
| Shuler, Samuel M.,      | Liverpool,                    | Perry county.        |
| Shull, Carl W.,         | 742 Christian street,         | Philadelphia.        |
| Shull, David F.,        | 3928 Market street,           | Philadelphia.        |
| Shull, Silas H.,        | 3928 Market street,           | Philadelphia.        |
| Shulmyer, Charles J.,   | 354 N. Queen street,          | Lancaster.           |
| Shumaker, Jesse B.,     | West Bridgewater,             | Beaver county.       |
| Shumaker, Philip W.,    | New Bethlehem,                | Clarion county.      |
| Shunk, Daniel P.,       | Passyunk and Washington avs., | Philadelphia.        |
| Sibbald, John,          | Fox Chase,                    | Philadelphia.        |
| Sible, Lewis A.,        | 217 Broad street,             | Johnstown.           |
| Sickler, Frederick V.,  | Mill City,                    | Wyoming county.      |
| Sickler, Harvey, 2d,    | Exeter,                       | Wyoming county.      |
| Sickler Samuel H.,      | Tunkhannock,                  | Wyoming county.      |
| Siddall, William F.,    | West Chester,                 | Chester county.      |
| Sides, Howard B.,       | Downingtown,                  | Chester county.      |
| Sieger, Clinton W.,     | Siegfried's Bridge,           | Northampton county.  |
| Siegfried, Henry J.,    | Bradford,                     | McKean county.       |
| Siegfried, John M.,     | Warren,                       | Warren county.       |
| Siggins, James B.,      | Tionesta,                     | Forest county.       |
| Sigling, Charles J.,    | 2328 E. Norris street,        | Philadelphia.        |
| Simes, John W. Jr.,     | 2138 Market street,           | Philadelphia.        |
| Simes, Samuel,          | 2033 Chestnut street,         | Philadelphia.        |
| Simes, William F.,      | 13 S. Thirteenth street,      | Philadelphia.        |
| Simes, W. L.,           | 13 S. Thirteenth street,      | Philadelphia.        |
| Simmonds, Annie,        | 5 Market street,              | Shamokin.            |
| Simmonds, Thomas F.,    | 5 Market street,              | Shamokin.            |
| Simmons, Charles B.,    | Oil City,                     | Venango county.      |
| Simmons, Martin S.,     | Oil City,                     | Venango county.      |
| Simons, James D.,       | Braddock,                     | Allegheny county.    |
| Simons, Robert,         | Paschall avenue,              | W. Philadelphia.     |
| Simpson, Robert,        | 1901 Arch street,             | Philadelphia.        |
| Sipe, George W.,        | Carlisle,                     | Cumberland county.   |
| Sipe, John E.,          | 7 E. Main street,             | Carlisle.            |
| Sitgreaves, Wesley C.,  | 700 N. Forty-fifth street,    | Philadelphia.        |

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| Sitler, Alpheus, . . .     | Harmony, . . .                          | Butler county.     |
| Skelton, William O., . .   | Sheffield, . . .                        | Warren county.     |
| Slater, James B., . . .    | 127 Franklin street, . . .              | Johnstown.         |
| Slaughter, John V., . .    | 3600 Richmond street, . . .             | Philadelphia.      |
| Slemmer, Edward, . . .     | 201 DeKalb street, . . .                | Norristown.        |
| Slifer, Levi K., . . .     | Tenth and York streets, . . .           | Philadelphia.      |
| Sloan, E. M., . . .        | Clarion, . . .                          | Clarion county.    |
| Slough, Agnes M., . . .    | 845 Hamilton street, . . .              | Allentown.         |
| Slough, Frank J., . . .    | 845 Hamilton street, . . .              | Allentown.         |
| Small, John H. Jr., . . .  | 133 E. Market street, . . .             | York.              |
| Smart, Clarence W., . . .  | 28 Anderson street, . . .               | Allegheny.         |
| Smedley, Bennett L., . .   | 2050 Vine street, . . .                 | Philadelphia.      |
| Smink, Wm. H. R., . . .    | 33 Market street, . . .                 | Shamokin.          |
| Smith, Albert H., . . .    | 6328 Woodland avenue, . . .             | Philadelphia.      |
| Smith, Alvin R., . . .     | Girard, . . .                           | Erie county.       |
| Smith, Amos H., . . .      | New Providence, . . .                   | Lancaster county.  |
| Smith, Benjamin F., . .    | 1851 Franklin Place, . . .              | Harrisburg.        |
| Smith, Byron A., . . .     | 1726 Peach street, . . .                | Erie.              |
| Smith, Christopher C., . . | 4627 Frankford avenue, . . .            | Philadelphia.      |
| Smith, Clarence C., . . .  | Campton, . . .                          | Bradford county.   |
| Smith, Clarence T., . . .  | 117 E. Cumberland street, . . .         | Philadelphia.      |
| Smith, Daniel W., . . .    | Houtzdale, . . .                        | Clearfield county. |
| Smith, Dennis C., . . .    | Guy's Mills, . . .                      | Crawford county.   |
| Smith, Edward W., . . .    | 764 W. Fourth street, . . .             | Williamsport.      |
| Smith, Edwin, . . .        | Saegertown, . . .                       | Crawford county.   |
| Smith, Eric A., . . .      | Sixteenth and Bainbridge streets, . . . | Philadelphia.      |
| Smith, Eugene F., . . .    | Edwardsville, . . .                     | Luzerne county.    |
| Smith, Frank, . . .        | Millerton, . . .                        | Tioga county.      |
| Smith, Frederick A., . .   | Corry, . . .                            | Erie county.       |
| Smith, Frederick H., . .   | 127 S. Fourth street, . . .             | Philadelphia.      |
| Smith, Frederick W., . .   | Ludlow, . . .                           | McKean county.     |
| Smith, Frederick W., . .   | 603 Gray's Ferry Road, . . .            | Philadelphia.      |
| Smith, G. A., . . .        | Liberty, . . .                          | Tioga county.      |
| Smith, George W., . . .    | Laceyville, . . .                       | Wyoming county.    |
| Smith, Harry C., . . .     | 1229 Liberty street, . . .              | Franklin.          |
| Smith, Harry E., . . .     | Parkesburg, . . .                       | Chester county.    |
| Smith, Harry E., . . .     | 334 Adams avenue, . . .                 | Scranton.          |
| Smith, Harry L., . . .     | 34 E. Broad street, . . .               | Hazleton.          |
| Smith, Hays, . . .         | 4067 Penn avenue, . . .                 | Pittsburgh.        |
| Smith, Henry G., . . .     | 639 Hamilton street, . . .              | Allentown.         |
| Smith, Herbert B., . . .   | Bradford, . . .                         | McKean county.     |
| Smith, Horace, . . .       | 3 E. Market street, . . .               | York.              |
| Smith, Howard M., . . .    | 2445 Ridge avenue, . . .                | Philadelphia.      |
| Smith, Jacob W., . . .     | Mauch Chunk, . . .                      | Carbon county.     |
| Smith, James H., . . .     | Conneautville, . . .                    | Crawford county.   |
| Smith, James T., . . .     | New Berlin, . . .                       | Union county.      |
| Smith, J. C., . . .        | McKeesport, . . .                       | Allegheny county.  |
| Smith, J. M., . . .        | Catawissa, . . .                        | Columbia county.   |
| Smith, John C., . . .      | Huntingdon, . . .                       | Huntingdon county. |
| Smith, John C., . . .      | 4067 Penn avenue, . . .                 | Pittsburgh.        |
| Smith, Judson S., . . .    | Tyrone, . . .                           | Blair county.      |
| Smith, Lawrence B., . .    | New Brighton, . . .                     | Beaver county.     |
| Smith, Mark L., . . .      | 643 Snyder avenue, . . .                | Philadelphia.      |
| Smith, Mary E., . . .      | West Elizabeth, . . .                   | Allegheny county.  |
| Smith, Nathaniel, . . .    | Millerton, . . .                        | Tioga county.      |
| Smith, Norton M., . . .    | Bean and Franklin streets, . . .        | Washington.        |
| Smith, Parker T., . . .    | 828 Catharine street, . . .             | Philadelphia.      |

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| Smith, Prescott A.,    | Camptown,                      | Fayette county.      |
| Smith, Reuben,         | Penfield,                      | Clearfield county.   |
| Smith, Samuel M.,      | Jefferson,                     | Greene county.       |
| Smith, Samuel S.,      | Huntingdon,                    | Huntingdon county.   |
| Smith, Sherman F.,     | Stroudsburg,                   | Monroe county.       |
| Smith, S. Harper,      | Greenock,                      | Allegheny county.    |
| Smith, Sylvester S.,   | Driftwood,                     | Cameron county.      |
| Smith, Valentine H.,   | Second and Green streets,      | Philadelphia.        |
| Smith, Walter A.,      | 1819 N. Fifteenth street,      | Philadelphia.        |
| Smith, William,        | Hites,                         | Allegheny county.    |
| Smyser, Eugene M.,     | 1500 S. Thirteenth street,     | Philadelphia.        |
| Smyser, George M.,     | 5033 Germantown avenue,        | Philadelphia.        |
| Smyser, John R.,       | 1813 Ridge avenue,             | Philadelphia.        |
| Snively, Harry B.,     | Lancaster,                     | Lancaster county.    |
| Snively, H. H.,        | Bernville,                     | Berks county.        |
| Snodgrass, David G.,   | West Middlesex,                | Mercer county.       |
| Snyder, Bertram,       | 1545 N. Seventh street,        | Philadelphia.        |
| Snyder, Harry L.,      | 528 Buttonwood street,         | Philadelphia.        |
| Snyder, Henry N.,      | Franklin and Berks streets,    | Philadelphia.        |
| Snyder, Howard G.,     | 1306 Girard avenue,            | Philadelphia.        |
| Snyder, John N.,       | Somerset,                      | Somerset county.     |
| Snyder, Jonathan W.,   | Mahanoy City,                  | Schuylkill county.   |
| Snyder, Myron T.,      | Hawley,                        | Wayne county.        |
| Snyder, Peter C.,      | Thirteenth and Market streets, | Harrisburg.          |
| Snyder, Plymouth W.,   | Hollidaysburg,                 | Blair county.        |
| Snyder, R. R.,         | Shippenville,                  | Clarion county.      |
| Sommers, Richard M.,   | Eleventh and Berks streets,    | Philadelphia.        |
| Sonntag, Maximilian,   | Ninth and Noble streets,       | Philadelphia.        |
| Sorg, Albert M.,       | Penn and Frankstown avenues,   | Pittsburgh.          |
| Souder, Joseph A.,     | 1816 Newbold street,           | Philadelphia.        |
| South, Harry G.,       | Longshore and Tulip streets,   | Philadelphia.        |
| Sowash, George,        | Irwin,                         | Westmoreland county. |
| Sowash, Samuel J.,     | Plain Grove,                   | Lawrence county.     |
| Spaeth, Julius,        | Carbondale,                    | Lackawanna county.   |
| Spangler, G. E.,       | Ashland,                       | Schuylkill county.   |
| Spangler, Jacob,       | Chambersburg,                  | Franklin county.     |
| Spangler, T. G.,       | Ashland,                       | Schuylkill county.   |
| Spannagel, Charles C., | 1607 Ridge avenue,             | Philadelphia.        |
| Sparkes, Samuel J.,    | Montrose,                      | Susquehanna county.  |
| Sparling, Windham,     | Philipsburg,                   | Beaver county.       |
| Speakman, William E.,  | 528 Arch street,               | Philadelphia.        |
| Speer, James F.,       | Philadelphia Hospital,         | Philadelphia.        |
| Speer, John S.,        | Sharpsburg,                    | Allegheny county.    |
| Spencer, Cornelius E., | 1401 N. Seventh street,        | Philadelphia.        |
| Spencer, Edwin F.,     | Glasgow,                       | Cambria county.      |
| Spencer, Frederick M., | Honesdale,                     | Wayne county.        |
| Spengler, Aaron,       | 530 Northampton street,        | Easton.              |
| Spengler, Allen,       | 14 Centre street,              | Easton.              |
| Spiese, Henry A.,      | Tamaqua,                       | Schuylkill county.   |
| Splane, Charles U.,    | 500 Smithfield street,         | Pittsburgh.          |
| Spohn, Jacob,          | 2 Carson street,               | Pittsburgh.          |
| Sprecher, Henry F.,    | 1843 N. Ninth street,          | Philadelphia.        |
| Springer, Everett F.,  | North Belle Vernon,            | Westmoreland county. |
| Springer, R. Ethan,    | Uniontown,                     | Fayette county.      |
| Sprissler, Oscar,      | 601 S. Ninth street,           | Philadelphia.        |
| Sprissler, Theodore,   | 601 S. Ninth street,           | Philadelphia.        |
| Sprohls, William W.,   | Houstonville,                  | Washington county.   |



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| Stackhouse, Wm. M.,       | Emilie, . . . . .                  | Bucks county.           |
| Stadelman, Samuel F.,     | Ardmore, . . . . .                 | Montgomery county.      |
| Stahler, Harry L., . . .  | Main and Swede streets, . . . .    | Norristown.             |
| Stahler, William, . . .   | Main and Swede streets, . . . .    | Norristown.             |
| Staley, James, . . . .    | Tarentum, . . . . .                | Allegheny county.       |
| Staley, Sarah M., . . .   | Tarentum, . . . . .                | Allegheny county.       |
| Stallman, Harry R., . .   | Chestnut Hill, . . . . .           | Philadelphia.           |
| Stamp, William H., . .    | Towanda, . . . . .                 | Bradford county.        |
| Stanley, Alfred G., . .   | Lykens, . . . . .                  | Dauphin county.         |
| Stansbury, Wilson V.,     | 2300 E. York street, . . . . .     | Philadelphia.           |
| Starck, Albert A. G., . . | 160 Girard avenue, . . . . .       | Philadelphia.           |
| Stark, Mahlon S., . . .   | Wilkes-Barre, . . . . .            | Luzerne county.         |
| Stathen, Beach I., . . .  | 1647 Federal street, . . . . .     | Philadelphia.           |
| Statler, Charles H., . .  | Johnstown, . . . . .               | Cambria county.         |
| Stauffer, Benjamin W.,    | Campbellstown, . . . . .           | Lebanon county.         |
| Stauffer, William M., .   | Hanover, . . . . .                 | York county.            |
| Steans, John C., . . . .  | Mifflinburg, . . . . .             | Union county.           |
| Stearns, Isaac, . . . .   | 334 S. Fifth street, . . . . .     | Philadelphia.           |
| Stearns, Moses, . . . .   | 334 S. Fifth street, . . . . .     | Philadelphia.           |
| St. Clair, Theodore A.,   | 662 N. Thirty-ninth street, . . .  | Philadelphia.           |
| Stedem, Fred W. E., . .   | 1401 Fairmount avenue, . . . .     | Philadelphia.           |
| Steel, William H., . . .  | 2121 Franklin street, . . . . .    | Philadelphia.           |
| Steele, John N., . . . .  | Parkesburg, . . . . .              | Chester county.         |
| Steele, William A., . . . | 371 Rebecca street, . . . . .      | Allegheny.              |
| Steelman, Peter, . . . .  | 1941 S. Sixth street, . . . . .    | Philadelphia.           |
| Steever, Aaron M., . . .  | Sixth and Boas streets, . . . . .  | Harrisburg.             |
| Steever, Charles C., . .  | 107 Union street, . . . . .        | Millersburg.            |
| Steever, E. W., . . . .   | 107 Union street, . . . . .        | Millersburg.            |
| Stein, Jacob H., . . . .  | 801 Penn street, . . . . .         | Reading.                |
| Stein, James H., . . . .  | Conshohocken, . . . . .            | Montgomery county.      |
| Stein, Matthew R., . . .  | Mahanoy City, . . . . .            | Schuylkill county.      |
| Steinberger, George C.,   | 64 Chestnut street, . . . . .      | Allegheny.              |
| Steinmetz, C. M., . . . . | 353 S. Sixth street, . . . . .     | Reading.                |
| Steinmetz, William F.,    | 3522 Germantown avenue, . . . .    | Philadelphia.           |
| Steitz, Louis, . . . . .  | 157 Pennsylvania avenue, . . . .   | Allegheny.              |
| Steltzer, Lewis J., . . . | 242 Chestnut street, . . . . .     | Philadelphia.           |
| Stem, Preston E., . . . . | 727 Hamilton street, . . . . .     | Allentown.              |
| Stem, W. Nelson, . . . .  | Twentieth and Callowhill streets,  | Philadelphia.           |
| Stenger, Bernard J., . .  | 1601 Carson street, . . . . .      | Pittsburgh, South Side. |
| Stenger, Joseph W., . .   | Mount Oliver, . . . . .            | Allegheny county.       |
| Sterigere, Stephen D., .  | New Albany, . . . . .              | Bradford county.        |
| Stermer, John H., . . .   | 1545 N. Seventh street, . . . . .  | Philadelphia.           |
| Sterner, Oliver H., . . . | Frankford, . . . . .               | Philadelphia.           |
| Sterrett, Robert M., . .  | 6130 Penn street, . . . . .        | Pittsburgh.             |
| Stephen, William L., . .  | 619 Walnut street, . . . . .       | Reading.                |
| Stevens, Atherton B., .   | South Canaan, . . . . .            | Wayne county.           |
| Stevens, Bessie E., . . . | 627 Copeland street, . . . . .     | Pittsburgh.             |
| Stevens, Edward H., . .   | Laceyville, . . . . .              | Wyoming county.         |
| Stevens, Salmon H., . .   | 627 Copeland street, . . . . .     | Pittsburgh.             |
| Stevens, Sherman N., .    | Harrison Valley, . . . . .         | Potter county.          |
| Stevens, S. S., . . . .   | 724 Penn street, . . . . .         | Reading.                |
| Stevens, William A., . .  | Hamilton, . . . . .                | Wayne county.           |
| Stevens, William B., . .  | Elkland, . . . . .                 | Tioga county.           |
| Stevenson, George F., .   | 1001 S. Twenty-first street, . . . | Philadelphia.           |
| Stevenson, J. F., . . . . | 232 Arch street, . . . . .         | Allegheny.              |
| Stevenson, Silas, . . . . | New Bedford, . . . . .             | Lawrence county.        |
| Stewart, Albert H., . . . | Sharon, . . . . .                  | Mercer county.          |

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| Stewart, David, . . . .  | Port Penn, . . . . .                | New Castle county, Del. |
| Stewart, Henry C., . .   | 4434 Lancaster avenue, . . . . .    | Philadelphia.           |
| Stewart, John H., . .    | DuBois, . . . . .                   | Clearfield county.      |
| Stewart, Josiah, . . .   | Clark, . . . . .                    | Mercer county.          |
| Stewart, Margaret E., .  | Clark, . . . . .                    | Mercer county.          |
| Stewart, Samuel, . . .   | 187 Federal street, . . . . .       | Allegheny.              |
| Stewart, Thomas Dale,    | Port Penn, . . . . .                | New Castle county, Del. |
| Stewart, William H., .   | Kittanning, . . . . .               | Armstrong county.       |
| Stewart, William L., .   | Murrysville, . . . . .              | Westmoreland county.    |
| Stichter, Henry D., . .  | East Greenville, . . . . .          | Montgomery county.      |
| Stiefel, Ernest C., . .  | 1924 Carson street, . . . . .       | Pittsburgh.             |
| Stier, Frank E., . . .   | 109 S. Third street, . . . . .      | Easton.                 |
| Stiles, Henry L., . . .  | 539 N. Twenty-third street, . . . . | Philadelphia.           |
| Stiles, Thomas J., . .   | Berwick, . . . . .                  | Columbia county.        |
| Stoeber, J. M., . . . .  | Chester, . . . . .                  | Delaware county.        |
| Stoke, H. Alexander,     | Reynoldsville, . . . . .            | Jefferson county.       |
| Stokely, Joseph, . . .   | 355 Fifth avenue, . . . . .         | Pittsburgh.             |
| Stokely, Nehemiah, . .   | 528 Fifth avenue, . . . . .         | Pittsburgh.             |
| Stokes, Andrew J., . .   | Morris, . . . . .                   | Tioga county.           |
| Stokes, James, . . . .   | West Chester, . . . . .             | Chester county.         |
| Stoler, David M., . . .  | Saxton, . . . . .                   | Bedford county.         |
| Stoler, Jacob C., . . .  | Saxton, . . . . .                   | Bedford county.         |
| Stone, Charles W., . . . | Sabinsville, . . . . .              | Tioga county.           |
| Stone, Lewis J., . . .   | Sabinsville, . . . . .              | Tioga county.           |
| Stone, Nathaniel, . . .  | Corry, . . . . .                    | Erie county.            |
| Stoner, W. J., . . . .   | 4823 Lancaster avenue, . . . . .    | Philadelphia.           |
| Storey, Alexander W.,    | North Clarendon, . . . . .          | Warren county.          |
| Storm, William, . . . .  | Cochrannton, . . . . .              | Crawford county.        |
| Stout, John H., . . . .  | 123 Broadway, . . . . .             | Milton.                 |
| Stout, Lemuel, . . . .   | 1215 Market street, . . . . .       | Philadelphia.           |
| Stout, William S., . . . | Mechanicsburg, . . . . .            | Cumberland county.      |
| Stoy, Gustavus A. B., .  | Waynesburg, . . . . .               | Greene county.          |
| Straesser, Samuel, . .   | Dunbar, . . . . .                   | Fayette county.         |
| Straessley, Francis X.,  | 164 East street, . . . . .          | Allegheny.              |
| Strang, Orville W., . .  | Mills, . . . . .                    | Potter county.          |
| Stratton, Albert G., . . | 605 Edgmont avenue, . . . . .       | Chester.                |
| Stratton, F. G., . . .   | Strattonville, . . . . .            | Clarion county.         |
| Stratton, George, . . .  | Linesville, . . . . .               | Crawford county.        |
| Streeter, Frank P., . .  | Chestnut Hill, . . . . .            | Philadelphia.           |
| Streeter, N. Dunham, .   | 2600 N. Twelfth street, . . . . .   | Philadelphia.           |
| Stretch, John Jr., . .   | 277 Federal street, . . . . .       | Allegheny.              |
| Stricker, Julius, . . .  | Portage, . . . . .                  | Cambria county.         |
| Stright, Alexander P.,   | Shire Oaks, . . . . .               | Washington county.      |
| Stright, Stephen A., . . | Shire Oaks, . . . . .               | Washington county.      |
| Strohecker, James F., .  | Beavertown, . . . . .               | Snyder county.          |
| Strohecker, Samuel M.,   | 710 Walnut street, . . . . .        | Reading.                |
| Strohm, Theodore B., .   | Newburg, . . . . .                  | Cumberland county.      |
| Strott, John, . . . . .  | 171 Chestnut street, . . . . .      | Allegheny.              |
| Stroup, John C., . . .   | Elizabethville, . . . . .           | Dauphin county.         |
| Stroup, Joseph H., . .   | 503 Brown street, . . . . .         | Philadelphia.           |
| Strouse, Theodore H., .  | 1946 Diamond street, . . . . .      | Philadelphia.           |
| Strunk, Lewis C., . . .  | 139 Brown street, . . . . .         | Philadelphia.           |
| Stuart, Andrew J., . . . | Troy, . . . . .                     | Bradford county.        |
| Stuart, Jesse E., . . .  | Athens, . . . . .                   | Bradford county.        |
| Stuckert, Herman H., .   | Allentown, . . . . .                | Lehigh county.          |
| Stucky, Emil G., . . .   | 2329 Penn avenue, . . . . .         | Pittsburgh.             |
| Sturdevant, Dennis W.,   | Laceyville, . . . . .               | Wyoming county.         |

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| Sturgeon, Walter J., . . . | Kittanning, . . . . .               | Armstrong county.     |
| Suess, John P., . . . .    | 5 E. Market square, . . . . .       | Williamsport.         |
| Sunderland, Henry, . . .   | Frankford, . . . . .                | Philadelphia.         |
| Supplee, Isaac M., . . .   | 665 N. Eighth street, . . . . .     | Philadelphia.         |
| Supplee, Jesse L., . . .   | Thirteenth and Green streets, . . . | Philadelphia.         |
| Supplee, William E., . .   | 665 N. Eighth street, . . . . .     | Philadelphia.         |
| Sussdorff, Frank L., . .   | 1122 Walnut street, . . . . .       | Philadelphia.         |
| Sutliff, Sidney W., . . .  | Nanticoke, . . . . .                | Luzerne county.       |
| Sutton, George S., . . .   | Mendon, . . . . .                   | Westmoreland county.  |
| Sutton, John, . . . .      | Pine Grove, . . . . .               | Schuylkill county.    |
| Sutton, William H., . . .  | 2643 N. Ninth street, . . . . .     | Philadelphia.         |
| Swain, Edward T., . . .    | Renovo, . . . . .                   | Clinton county.       |
| Swain, Harry, . . . .      | 1829 S. Second street, . . . . .    | Philadelphia.         |
| Swainbank, Harry H., . .   | 72 S. Main street, . . . . .        | Wilkes-Barre.         |
| Swarger, E. F. D., . . .   | 1545 N. Sixth street, . . . . .     | Harrisburg.           |
| Swartley, Harry C., . . .  | 1410 Chestnut street, . . . . .     | Philadelphia.         |
| Swarts, William J., . . .  | North East, . . . . .               | Erie county.          |
| Swartz, Charles M., . . .  | Hughesville, . . . . .              | Lycoming county.      |
| Swartz, John R., . . . .   | Hughesville, . . . . .              | Lycoming county.      |
| Swartz, Mrs. Susan C., . . | Duncannon, . . . . .                | Perry county.         |
| Swearer, John L., . . .    | Main street and Wabash avenue, . .  | Pittsburgh, West End. |
| Swearingen, Thomas, . .    | Hookstown, . . . . .                | Beaver county.        |
| Sweeley, William, . . .    | Williamsport, . . . . .             | Lycoming county.      |
| Swetland, Edmund R., . .   | Rouseville, . . . . .               | Venango county.       |
| Swisher, David F., . . .   | Darby, . . . . .                    | Delaware county.      |
| Switzer, Linn B., . . .    | 1031 Vine street, . . . . .         | Philadelphia.         |
| Swope, G. E., . . . .      | Newville, . . . . .                 | Cumberland county.    |
|                            |                                     |                       |
| Tafel, A. J., . . . .      | 1011 Arch street, . . . . .         | Philadelphia.         |
| Tafel, Edward F., . . .    | 167 Washington avenue, . . . . .    | Allegheny.            |
| Tagg, William, . . . .     | 1900 Judson Place, . . . . .        | Philadelphia.         |
| Taggart, David, . . . .    | Frackville, . . . . .               | Schuylkill county.    |
| Taggart, Leonard, . . .    | Emporium, . . . . .                 | Cameron county.       |
| Taggart, William B., . .   | West Pittston, . . . . .            | Luzerne county.       |
| Taney, John M., . . . .    | 1 Morris street, . . . . .          | Johnstown.            |
| Tannehill, Manoah, . . .   | Confluence, . . . . .               | Somerset county.      |
| Tassell, W. H., . . . .    | Shingle House, . . . . .            | Potter county.        |
| Tatem, Charles H., . . .   | 2050 Vine street, . . . . .         | Philadelphia.         |
| Taylor, Alfred B., . . .   | 262 S. Twelfth street, . . . . .    | Philadelphia.         |
| Taylor, Claude E., . . .   | Forest City, . . . . .              | Susquehanna county.   |
| Taylor, Coe S., . . . .    | Lexington av. and Tenth st., . . .  | Altoona.              |
| Taylor, E. G., . . . .     | Meadville, . . . . .                | Crawford county.      |
| Taylor, Elijah L., . . .   | Altoona, . . . . .                  | Blair county.         |
| Taylor, George H., . . .   | 17 N. Eleventh street, . . . . .    | Philadelphia.         |
| Taylor, George W., . . .   | McConnellsburg, . . . . .           | Fulton county.        |
| Taylor, G. S., . . . .     | Thirteenth and Market streets, . .  | Philadelphia.         |
| Taylor, Harry B., . . .    | 1306 Girard avenue, . . . . .       | Philadelphia.         |
| Taylor, Henry C., . . .    | Doylestown, . . . . .               | Bucks county.         |
| Taylor, H. E., . . . .     | Forest City, . . . . .              | Susquehanna county.   |
| Taylor, Horace B., . . .   | Tenth and Callowhill streets, . . . | Philadelphia.         |
| Taylor, John D., . . . .   | 1333 S. Twentieth street, . . . . . | Philadelphia.         |
| Taylor, Joseph Y., . . .   | 1201 Spruce street, . . . . .       | Philadelphia.         |
| Taylor, Richard, . . . .   | Wilkes-Barre, . . . . .             | Luzerne county.       |
| Taylor, Robert W., . . .   | 1445 N. Ninth street, . . . . .     | Reading.              |
| Taylor, Millard F., . . .  | Leechburg, . . . . .                | Armstrong county.     |
| Taylor, W. Carroll, . . .  | Spring City, . . . . .              | Chester county.       |
| Tea, George W., . . . .    | 3400 Penn avenue, . . . . .         | Pittsburgh.           |

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| Temple, Frank M., . . .       | Fairview, . . . . .                    | Erie county.         |
| Templeton, Samuel M., . . .   | Washington, . . . . .                  | Washington county.   |
| Templeton, Thomas L., . . .   | Brookville, . . . . .                  | Jefferson county.    |
| Terpe, Frederick L., . . .    | 510 Cedar street, . . . . .            | Scranton.            |
| Test, Wesley W., . . .        | 1600 Poplar street, . . . . .          | Philadelphia.        |
| Thatcher, Jesse P., . . .     | West Chester, . . . . .                | Chester county.      |
| Thayer, Edward M., . . .      | 1829 Mervine street, . . . . .         | Philadelphia.        |
| Thomas, Albert D., . . .      | Forty Fort, . . . . .                  | Luzerne county.      |
| Thomas, Daniel J., . . .      | Scranton, . . . . .                    | Lackawanna county.   |
| Thomas, George M., . . .      | Derry Station, . . . . .               | Westmoreland county. |
| Thomas, Harry F., . . .       | Greensburg, . . . . .                  | Westmoreland county. |
| Thomas, Howard N., . . .      | Thomas Station, . . . . .              | Washington county.   |
| Thomas, James M., . . .       | Thomas Station, . . . . .              | Washington county.   |
| Thomas, Lancaster, . . .      | 1900 Pine street, . . . . .            | Philadelphia.        |
| Thomas, Thomas D., . . .      | Lehighton, . . . . .                   | Carbon county.       |
| Thompson, Charles, . . .      | 508 S. Main street, . . . . .          | Scranton.            |
| Thompson, Charles A., . . .   | Irwin, . . . . .                       | Westmoreland county. |
| Thompson, Ebenezer F., . . .  | 1920 Race street, . . . . .            | Philadelphia.        |
| Thompson, Ebenezer K., . . .  | Titusville, . . . . .                  | Crawford county.     |
| Thompson, E. J., . . .        | Union City, . . . . .                  | Erie county.         |
| Thompson, Frank F., . . .     | 1600 N. Eighth street, . . . . .       | Philadelphia.        |
| Thompson, George W., . . .    | Titusville, . . . . .                  | Crawford county.     |
| Thompson, Harry M., . . .     | Clarion, . . . . .                     | Clarion county.      |
| Thompson, Henry M., . . .     | 111 Arch street, . . . . .             | Allegheny.           |
| Thompson, Isaac N., . . .     | North Washington, . . . . .            | Butler county.       |
| Thompson, James S., . . .     | Union City, . . . . .                  | Erie county.         |
| Thompson, John R., . . .      | Smith's Ferry, . . . . .               | Beaver county.       |
| Thompson, Lester A., . . .    | Brookville, . . . . .                  | Jefferson county.    |
| Thompson, Melville S., . . .  | Coudersport, . . . . .                 | Potter county.       |
| Thompson, Samuel H., . . .    | . . . . .                              | Philadelphia.        |
| Thompson, Samuel L., . . .    | Blooming Valley, . . . . .             | Crawford county.     |
| Thompson, Samuel Y., . . .    | Danville, . . . . .                    | Montour county.      |
| Thompson, William B., . . .   | 1700 Mt. Vernon street, . . . . .      | Philadelphia.        |
| Thompson, William C., . . .   | Coatesville, . . . . .                 | Chester county.      |
| Thompson, William F., . . .   | 1304 Derry street, . . . . .           | Harrisburg.          |
| Thompson, William O., . . .   | Summit Hill, . . . . .                 | Carbon county.       |
| Thorley, J. D., . . .         | 119 High street, . . . . .             | Pottstown.           |
| Thorley, Thomas A., . . .     | 449 State street, . . . . .            | Harrisburg.          |
| Thorn, A., . . . . .          | Kylertown, . . . . .                   | Clearfield county.   |
| Thorn, P. D., . . . . .       | Morrisdale Mines, . . . . .            | Clearfield county.   |
| Thornley, Frederick C., . . . | 1649 N. Seventh street, . . . . .      | Philadelphia.        |
| Thro, John M., . . .          | 214 S. Hyde Park avenue, . . . . .     | Scranton.            |
| Throp, Frank W., . . .        | New Hope, . . . . .                    | Bucks county.        |
| Tice, William B., . . .       | Conemaugh, . . . . .                   | Cambria county.      |
| Tidball, Frank B., . . .      | Darlington, . . . . .                  | Beaver county.       |
| Tiffany, Judson E., . . .     | Pleasant Mount, . . . . .              | Wayne county.        |
| Tift, Frederick A., . . .     | 1941 N. Twenty-first street, . . . . . | Philadelphia.        |
| Tingley, Julius P. A., . . .  | Hop Bottom, . . . . .                  | Susquehanna county.  |
| Tinsley, Grant S., . . .      | Wrightsville, . . . . .                | York county.         |
| Tobias, Joseph K., . . .      | Ephrata, . . . . .                     | Lancaster county.    |
| Toboldt, Leopold E. F., . . . | 1201 Columbia avenue, . . . . .        | Philadelphia.        |
| Tod, Alva Forman, . . .       | 2101 N. Fifth street, . . . . .        | Philadelphia.        |
| Todd, Bela B., . . . . .      | Beaver Falls, . . . . .                | Beaver county.       |
| Todd, Harry B., . . . . .     | . . . . .                              | Pittsburgh.          |
| Todd James C., . . . . .      | 4403 Main street, . . . . .            | Manayunk.            |
| Tomlin, Millard F., . . .     | 827 Spring Garden street, . . . . .    | Philadelphia.        |
| Tomlinson, John, . . .        | 4000 Girard avenue, . . . . .          | Philadelphia.        |



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| Tomlinson, Thomas C.,   | 1300 S. Fifth street,             | Philadelphia.          |
| Tomlinson, Wells,       | Twelfth and Stiles streets,       | Philadelphia.          |
| Tonson, Alfred E.,      | 410 W. Eighth street,             | Erie.                  |
| Toplis, William G.,     | 4473 Germantown avenue,           | Philadelphia.          |
| Torbert, John S.,       | Driftwood,                        | Cameron county.        |
| Torrence, Albert,       | 307 Market street,                | Pittsburgh.            |
| Torrence, James,        | Western and Grant avenues,        | Allegheny.             |
| Totten, R. M.,          | 4301 Butler street,               | Pittsburgh.            |
| Tovar, Louis F.,        | 608 Richmond street,              | Philadelphia.          |
| Towler, S. S.,          | Marionville,                      | Forest county.         |
| Townsend, Addie R.,     | Bridesburg,                       | Philadelphia.          |
| Townsend, Edward S.,    | Tenth and Arch streets,           | Philadelphia.          |
| Traut, Henry G.,        | Girard,                           | Erie county.           |
| Trego, Cyrus,           | Cedarville,                       | Chester county.        |
| Treichler, Claudius G., | Honey Brook,                      | Chester county.        |
| Treichler, Louis A.,    | 4677 Germantown avenue,           | Philadelphia.          |
| Trenchard, John F.,     | 2235 Richmond street,             | Philadelphia.          |
| Tribby, Elmer E.,       | 63 Federal street,                | Allegheny.             |
| Trist, Edwin A.,        | 1555 Chadwick street,             | Philadelphia.          |
| Troth, Frank D.,        | 42 Amanda avenue,                 | Pittsburgh.            |
| Trout, Charles C.,      | Girardville,                      | Schuylkill county.     |
| Trout, Nicholas C.,     | McConnellsburg,                   | Fulton county.         |
| Trout, William F.,      | McConnellsburg,                   | Fulton county.         |
| Trout, Winfield S.,     | 4050 Haverford street,            | Philadelphia.          |
| Trout, Zachary T.,      | Girardville,                      | Schuylkill county.     |
| Trumbauer, Henry T.,    | Coopersburg,                      | Lehigh county.         |
| Trumpfeller, H. H.,     | New Columbia,                     | Union county.          |
| Trupp, Louis,           | 900 N. Eighth street,             | Philadelphia.          |
| Tuck, Helen,            | 7 S. Main street,                 | Wilkes-Barre.          |
| Tuck, Henry C.,         | 7 S. Main street,                 | Wilkes-Barre.          |
| Tuck, William H.,       | 7 S. Main street,                 | Wilkes-Barre.          |
| Tuller, Philo,          | Tioga,                            | Tioga county.          |
| Turner, Alexander,      | 1558 N. Eleventh street,          | Philadelphia.          |
| Turner, Curtis W.,      | Twentieth and Spring Garden sts., | Philadelphia.          |
| Turner, Dudley H.,      | Towanda,                          | Bradford county.       |
| Turner, Herbert W.,     | 701 Chestnut street,              | Altoona.               |
| Turner, William L.,     | Eleventh and Oxford streets,      | Philadelphia.          |
| Tustin, Joseph C.,      | 1500 Wharton street,              | Philadelphia.          |
| Tuttle, William C.,     | Wilkes-Barre,                     | Luzerne county.        |
| Tyler, Watson,          | Shamokin,                         | Northumberland county. |
| Tyler, William C.,      | Rouseville,                       | Venango county.        |
| Uhler, Sydenham P.,     | Stone Church,                     | Northampton county.    |
| Uller, Emil J.,         | 124 Brook street,                 | Titusville.            |
| Ulrich, Ulysses,        | 824 State street,                 | Erie.                  |
| Ulsh, J. Howard,        | Selinsgrove,                      | Snyder county.         |
| Umrath, Gotthilf F. E., | 429 E. Fourteenth street,         | Erie.                  |
| Unangst, Eugene B.,     | 124 S. Main street,               | Bethlehem.             |
| Updike, Thomas B.,      | 1801 Penn avenue,                 | Pittsburgh.            |
| Urban, B. F. W.,        | 312 S. Queen street,              | Lancaster.             |
| Urban, Anthony B.,      | 419 Larimer avenue,               | Pittsburgh.            |
| Urban, Frederick L.,    | 1203 Carson street,               | Pittsburgh.            |
| Urban, Joseph P.,       | 201 Franklin street,              | Allegheny.             |
| Usilton, Charles A.,    | 1232 S. Tenth street,             | Philadelphia.          |
| Vanasdale, David A.,    | 81 Taggart street,                | Allegheny.             |
| Van Buskirk, James.,    | 2301 N. Second street,            | Philadelphia.          |

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| Van Buskirk, Sam'l L.,   | 2130 Hancock street,           | Philadelphia.          |
| Van Camp, Joshua E.,     | Plainfield,                    | Cumberland county.     |
| Vanderbeck, James A.,    | 427 S. Sixth street,           | Philadelphia.          |
| Vandergrift, Wm. H. F.,  | Bridesburg,                    | Philadelphia.          |
| Van Dyke, Arthur D.,     | Marysville,                    | Perry county.          |
| Van Dyke, James,         | Sunbury,                       | Northumberland county. |
| Van Dyke, William C.,    | 1205 Arch street,              | Philadelphia.          |
| Van Loon, James,         | 285 E. Market street,          | Wilkes-Barre.          |
| Vannort, William A.,     | 2443 Berks street,             | Philadelphia.          |
| Van Noten, Robert E.,    | Cooperstown,                   | Venango county.        |
| Van Valza, R. G.,        | Hughesville,                   | Lycoming county.       |
| Venn, August A. E.,      | McKeesport,                    | Allegheny county.      |
| Vermilya, Sherman S.,    | Grover,                        | Bradford county.       |
| Vernon, Mary G.,         | Clifton Heights,               | Delaware county.       |
| Verstine, Bernard,       | Brookville,                    | Jefferson county.      |
| Verstine, Charles E.,    | Brookville,                    | Jefferson county.      |
| Vetter, Mary E.,         | 415 Penn avenue,               | Scranton.              |
| Vetter, Philip J.,       | 415 Penn avenue,               | Scranton.              |
| Vischer, C. A. Otto,     | 1216 Girard avenue,            | Philadelphia.          |
| Vockrodt, Gustav A.,     | 509 Fifth avenue,              | Pittsburgh.            |
| Vogel, Louis H.,         | Webster av. and Roberts st.,   | Pittsburgh.            |
| Vogelbach, Edmund C.,    | 2332 Frankford avenue,         | Philadelphia.          |
| Von Cotzhausen, Louis,   | 2349 Thompson street,          | Philadelphia.          |
| Voorhees, Charles D.,    | Shingle,                       | Potter county.         |
| Vosburg, E. Frederick,   | Du Bois,                       | Clearfield county.     |
| Vosburg, Truman B.,      | Skinner's Eddy,                | Wyoming county.        |
| Voshage, Herman F.,      | Twentieth and Diamond streets, | Philadelphia.          |
| Voshage, Louis C.,       | Ashland,                       | Schuylkill county.     |
| Vowell, Louis S.,        | 62 S. Main street,             | Washington.            |
| Wagener, Charles H.,     | 1914 Fairmount avenue,         | Philadelphia.          |
| Wagenseller, George C.,  | Selinsgrove,                   | Snyder county.         |
| Wagner, John H.,         | 1701 Penn avenue,              | Philadelphia.          |
| Wagner, John O.,         | Beaver Springs,                | Snyder county.         |
| Wagner, George L.,       | 818 Walnut street,             | Allentown.             |
| Waite, Thomas C.,        | 355 Rebecca street,            | Allegheny.             |
| Waite, William A.,       | Sugar Notch,                   | Luzerne county.        |
| Waitz, Frank,            | Flemington,                    | Clinton county.        |
| Waldenberger, Louis,     | Manayunk,                      | Philadelphia.          |
| Waldman, John,           | East Cheltenham,               | Philadelphia.          |
| Walk, Ellwood P.,        | Hazleton,                      | Luzerne county.        |
| Walker, A. C.,           | Sewickley,                     | Allegheny county.      |
| Walker, Francis W., Jr., | New Brighton,                  | Beaver county.         |
| Walker, James,           | Ashley,                        | Luzerne county.        |
| Walker, John T.,         | East Cheltenham,               | Philadelphia.          |
| Walker, Ora,             | Derrick City,                  | McKean county.         |
| Walker, Thomas A.,       | Eleventh and Somerset streets, | Philadelphia.          |
| Walker, William B.,      | Clarksburg,                    | Indiana county.        |
| Wallace, David C.,       | New Castle,                    | Lawrence county.       |
| Wallace, Frank B.,       | 1307 Filbert street,           | Philadelphia.          |
| Wallace, Harlan L.,      | 925 Walnut street,             | Philadelphia.          |
| Wallace, John C.,        | New Castle,                    | Lawrence county.       |
| Wallace, Robert S.,      | East Brady,                    | Clarion county.        |
| Wallington, Edward M.,   | 1410 Chestnut street,          | Philadelphia.          |
| Wallis, Alfred M.,       | 2296 Second avenue,            | Pittsburgh.            |
| Wallis, James M.,        | 2630 Lehigh avenue,            | Philadelphia.          |
| Walter, Albert R.,       | 62 S. Main street,             | Wilkes-Barre.          |

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|------------------------------------|-------------------------------------------|------------------------|
| Walter, Eyer, . . . . .            | Lewisburg, . . . . .                      | Union county.          |
| Walter Frederick G., . . . . .     | Second and Green streets, . . . . .       | Philadelphia.          |
| Walter, William C., . . . . .      | 684 N. Thirteenth street, . . . . .       | Philadelphia.          |
| Walter, William H., . . . . .      | 1700 N. Second street, . . . . .          | Philadelphia.          |
| Walther, Charles L., . . . . .     | 171 Chestnut street, . . . . .            | Allegheny.             |
| Walthour, Samuel L., . . . . .     | Scottdale, . . . . .                      | Westmoreland county.   |
| Walton, David R., . . . . .        | London Grove, . . . . .                   | Chester county.        |
| Walton, George R., . . . . .       | Malvern, . . . . .                        | Chester county.        |
| Walton, Lucius L., . . . . .       | 408 S. Ninth street, . . . . .            | Philadelphia.          |
| Ward, Christopher C., . . . . .    | 1242 S. Twentieth street, . . . . .       | Philadelphia.          |
| Ward, Elab T., . . . . .           | 935 Arch street, . . . . .                | Philadelphia.          |
| Ward, J. M. B., . . . . .          | Chester, . . . . .                        | Delaware county.       |
| Ward, John S., . . . . .           | 1010 Callowhill street, . . . . .         | Philadelphia.          |
| Warg, Edwin C., . . . . .          | 1101 Arch street, . . . . .               | Philadelphia.          |
| Warner, Edward E., . . . . .       | 1001 S. Seventh street, . . . . .         | Philadelphia.          |
| Warner, Ellwood B., . . . . .      | Seventh and Carpenter streets. . . . .    | Philadelphia.          |
| Warner, William R., . . . . .      | 1228 Market street, . . . . .             | Philadelphia.          |
| Warner, William R., Jr., . . . . . | 1228 Market street, . . . . .             | Philadelphia.          |
| Warneck, Frank M., . . . . .       | Manor Station, . . . . .                  | Westmoreland county.   |
| Warren, Nathan C., . . . . .       | Upland, . . . . .                         | Delaware county.       |
| Warren, Thomas R., . . . . .       | Tioga, . . . . .                          | Tioga county.          |
| Warrick, Georgiana, . . . . .      | Ohioville, . . . . .                      | Beaver county.         |
| Warrick, James H., . . . . .       | Ohioville, . . . . .                      | Beaver county.         |
| Warrington, Chas. W., . . . . .    | 501 Callowhill street, . . . . .          | Philadelphia.          |
| Warrington, Edward, . . . . .      | 728 N. Seventh street, . . . . .          | Philadelphia.          |
| Wasley, Annis, . . . . .           | Shenandoah, . . . . .                     | Schuylkill county.     |
| Waterman, Benj. C., . . . . .      | 3875 Aspen street, . . . . .              | Philadelphia.          |
| Waters, Charles, . . . . .         | 451 N. Main street, . . . . .             | Pittston.              |
| Watkins, Edmund H., . . . . .      | 1717 S. Eighth street, . . . . .          | Philadelphia.          |
| Watkins, Theodore F., . . . . .    | 4953 Main street, . . . . .               | Germantown.            |
| Watkins, Thomas W., . . . . .      | Olyphant, . . . . .                       | Lackawanna county.     |
| Watkins, Wm. W., Jr., . . . . .    | Taylorville, . . . . .                    | Lackawanna county.     |
| Watson, Charles W., . . . . .      | 2001 South street, . . . . .              | Philadelphia.          |
| Watson, James K., . . . . .        | McEwensville, . . . . .                   | Northumberland county. |
| Watson, William C., . . . . .      | 2458 N. Second street, . . . . .          | Philadelphia.          |
| Watson, William P., . . . . .      | 226 Market street, . . . . .              | Clearfield.            |
| Watt, Harry C., . . . . .          | Shireoaks, . . . . .                      | Washington county.     |
| Weakley, John J., . . . . .        | 8 N. George street, . . . . .             | York.                  |
| Weatherly, T. Ogden, . . . . .     | 2313 Spring Garden street, . . . . .      | Philadelphia.          |
| Weaver, Edward S., . . . . .       | 2404 Peach street, . . . . .              | Erie.                  |
| Weaver, Frank C., . . . . .        | 861 N. Fifth street, . . . . .            | Philadelphia.          |
| Weaver, George P., . . . . .       | Hanover, . . . . .                        | York county.           |
| Weaver, Jacob G., . . . . .        | Strasburg, . . . . .                      | Lancaster county.      |
| Weaver, James B., . . . . .        | 106 Market street, . . . . .              | Philadelphia.          |
| Weaver, John A., . . . . .         | 334 Northampton street, . . . . .         | Easton.                |
| Weaver, Milton H., . . . . .       | Richlandtown, . . . . .                   | Bucks county.          |
| Weaver, Uriah M., . . . . .        | Altoona, . . . . .                        | Blair county.          |
| Weber, Alexander A., . . . . .     | Mahanoy City, . . . . .                   | Schuylkill county.     |
| Weber, Antoine W., . . . . .       | 6130 Penn avenue, . . . . .               | Pittsburgh, East End.  |
| Weber, August, . . . . .           | 1045 S. Sixth street, . . . . .           | Philadelphia.          |
| Weber, Augustus, . . . . .         | Allentown, . . . . .                      | Lehigh county.         |
| Weber, Frank C., . . . . .         | 2600 N. Twelfth street, . . . . .         | Philadelphia.          |
| Weber, Jacob, . . . . .            | Tenth and Lombard streets, . . . . .      | Philadelphia.          |
| Weber, Jeremiah, . . . . .         | 2954 Richmond street, . . . . .           | Philadelphia.          |
| Weber, Morris E., . . . . .        | Bryn Mawr, . . . . .                      | Montgomery county.     |
| Weber, Peter, . . . . .            | 76 Wylie avenue, . . . . .                | Pittsburgh.            |
| Weber, Peter G. A., . . . . .      | Fourth st. and Susquehanna av., . . . . . | Philadelphia.          |

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|------------------------|---------------------------------|------------------------|
| Weber, Reinhard J.,    | 700 N. Forty-third street,      | Philadelphia.          |
| Weber, William,        | Fifteenth and Thompson streets, | Philadelphia.          |
| Weber, William,        | 108 S. Main street,             | Pittston.              |
| Webster, George C.,    | Media,                          | Delaware county.       |
| Webster, Samuel C.,    | 1300 S. Seventeenth street,     | Philadelphia.          |
| Wedemeyer, Fred'k O.,  | Oil City,                       | Venango county.        |
| Weida, Charles,        | Ridge avenue and Oxford street, | Philadelphia.          |
| Weidman, Charles A.,   | 2148 Green street,              | Philadelphia.          |
| Weidner, David J.,     | 1336 S. Eighth street,          | Philadelphia.          |
| Weigle, Gilbert H.,    | 1421 N. Third street,           | Harrisburg.            |
| Weills, Isaac M.,      | 432 Market street,              | Harrisburg.            |
| Weills, William M. L., | Manitow Springs,                | El Paso county, Colo.  |
| Weimer, Josephine R.,  | Northumberland,                 | Northumberland county. |
| Weis, William,         | 306 N. Ninth street,            | Reading.               |
| Weiser, Henry K.,      | 219 Richmond street,            | Philadelphia.          |
| Weiss, Christian,      | 600 W. Girard avenue,           | Philadelphia.          |
| Weiss, Willard M.,     | Saint Mary's,                   | Elk county.            |
| Welch, Carlton S.,     | Wellsboro',                     | Tioga county.          |
| Welch, John C.,        | Eldred,                         | McKean county.         |
| Welman, Herbert J.,    | Cambridgeboro',                 | Crawford county.       |
| Wells, Elmore H.,      | Meshoppen,                      | Wyoming county.        |
| Wells, Henry C.,       | Smethport,                      | McKean county.         |
| Wells, James G.,       | 827 Spring Garden street,       | Philadelphia.          |
| Welsch, Benjamin P.,   | 201 Franklin street,            | Allegheny.             |
| Wenck, Sylvanus M. G., | 107 N. Queen street,            | Northumberland.        |
| Wenck, William G.,     | 107 N. Queen street,            | Northumberland.        |
| Wendel, H. Edward,     | Third and George streets,       | Philadelphia.          |
| Wendel, John, Jr.,     | 734 N. Fourth street,           | Philadelphia.          |
| Wenerd, John E.,       | 835 Market street,              | Philadelphia.          |
| Wenger, I. Lincoln,    | Lancaster,                      | Lancaster county.      |
| Wenner, Alfred J.,     | 2000 Market street,             | Philadelphia.          |
| Wenrich, Alfred B.,    | 16 N. Thirteenth street,        | Philadelphia.          |
| Werekshagen, C. A.,    | 1500 N. Fifth street,           | Philadelphia.          |
| Werle, Frederick H.,   | 76 East street,                 | Allegheny.             |
| Werst, Allen L.,       | Second and Dauphin streets,     | Philadelphia.          |
| Wert, John M.,         | Twelfth st. and Fairmount av.,  | Philadelphia.          |
| Wessels, John L.,      | 1300 Penn avenue,               | Pittsburgh.            |
| Westerhold, J. Henry,  | 19 S. George street,            | York.                  |
| Weston, Geary A.,      | Millersville,                   | Lancaster county.      |
| Wetherill, Abner T.,   | 1927 N. Twenty-fourth street,   | Philadelphia.          |
| Weyant, Thomas B.,     | Bedford,                        | Bedford county.        |
| Wheeler, Darius M.,    | Susquehanna Depot,              | Susquehanna county.    |
| Wheeler, Eno S.,       | Nicholson,                      | Wyoming county.        |
| Wheeler, Samuel A.,    | 468 S. Main street,             | Wilkes-Barre.          |
| Whisler, Horace C.,    | New Brighton,                   | Beaver county.         |
| Whitaker, Andrew R.,   | Phoenixville,                   | Chester county.        |
| Whitaker, Wm. H.,      | Seventh and Mifflin streets,    | Philadelphia.          |
| White, Charles A.,     | 1613 Filbert street,            | Philadelphia.          |
| White, James A.,       | Enon Valley,                    | Lawrence county.       |
| White, Jay M.,         | 213 Grand View avenue,          | Pittsburgh.            |
| White, Robert N.,      | Ligonier,                       | Westmoreland county.   |
| White, Sylvanus M.,    | Evergreen,                      | Bradford county.       |
| White, Thomas L.,      | 116 Fifth avenue,               | McKeesport.            |
| White, William D.,     | 63 Public square,               | Wilkes-Barre.          |
| White, William M.,     | 108 Fulton street,              | Pittsburgh.            |
| Whitecar, James W.,    | 2108 Norris street,             | Philadelphia.          |
| Whitehill, George W.,  | Marietta,                       | Lancaster county.      |



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| Whiteley, Wm. S.,       | Second and Hazelwood avenues,      | Pittsburgh.        |
| Whiteside, William E.,  | 3328 Chestnut street,              | Philadelphia.      |
| Whitling, Edward,       | Salem,                             | Clarion county.    |
| Whitman, James O.,      | Canton,                            | Bradford county.   |
| Whitman, William W.,    | Canton,                            | Bradford county.   |
| Whitesett, W. W.,       | Fayette City,                      | Fayette county.    |
| Whittem, William A.,    | Chestnut Hill,                     | Philadelphia.      |
| Whitting, W. H.,        | Knox,                              | Clarion county.    |
| Wickersham, Sam'l N.,   | 6359 Penn avenue,                  | Pittsburgh.        |
| Wickham, Anthony S.,    | 2230 N. Front street,              | Philadelphia.      |
| Widdicombe, Thos. C.,   | Eleventh and Arch streets,         | Philadelphia.      |
| Wiegel, Charles,        | 1806 Carson street,                | Pittsburgh.        |
| Wiegner, James A.,      | Slatington,                        | Lehigh county.     |
| Wieman, William,        | 21 Water street,                   | Pittsburgh.        |
| Wiethorn, Herman J.,    | 289 Beaver avenue,                 | Allegheny.         |
| Wike, Albert D.,        | Marietta,                          | Lancaster county.  |
| Wilbert, Martin I.,     | 1009 Wallace street,               | Philadelphia.      |
| Wilbur, Christopher J., | Moscow,                            | Lackawanna county. |
| Wilcox, Henry P.,       | Nicholson,                         | Wyoming county.    |
| Wilcox, Merett,         | Coleville,                         | McKean county.     |
| Wilcox, William,        | Renovo,                            | Clinton county.    |
| Wild, C. Ferdinand,     | 2023 Vine street,                  | Philadelphia.      |
| Wilder, Hans M.,        | Eleventh and Poplar streets,       | Philadelphia.      |
| Wildman, Carrie,        | Union City,                        | Erie county.       |
| Wildman, Elias,         | Yardley,                           | Bucks county.      |
| Wiles, D. Elmer,        | 20 E. Jefferson street,            | Butler.            |
| Wiley, S. Nelson,       | Arch and Airy streets,             | Norristown.        |
| Wilgus, John F.,        | 4627 Frankford avenue,             | Philadelphia.      |
| Wilgus, William A.,     | 1451 S. Second street,             | Philadelphia.      |
| Wilkins, Robert B.,     | Wattsburg,                         | Erie county.       |
| Wilkins, Weston G.,     | West Hickory,                      | Forest county.     |
| Wilkinson, Wm. J.,      | 3017 Frankford avenue,             | Philadelphia.      |
| Willard, Samuel B.,     | Yardley,                           | Bucks county.      |
| Willard, Theophilus N., | Manayunk,                          | Philadelphia.      |
| Williams, Benjamin,     | Greensboro',                       | Greene county.     |
| Williams, Charles N.,   | Twenty-fifth st. and Columbia av., | Philadelphia.      |
| Williams, Charles P.,   | 10 N. Broad street,                | Philadelphia.      |
| Williams, Daniel A.,    | Plymouth,                          | Luzerne county.    |
| Williams, David O.,     | 10 N. Broad street,                | Philadelphia.      |
| Williams, Elizabeth,    | 1000 S. Nineteenth street,         | Philadelphia.      |
| Williams, Frank P.,     | New Bethlehem,                     | Clarion county.    |
| Williams, Fred'k T.,    | Thirteenth and Wood streets,       | Philadelphia.      |
| Williams, George, Jr.,  | Beech Creek,                       | Clinton county.    |
| Williams, James E.,     | New Bethlehem,                     | Clarion county.    |
| Williams, James H.,     | Port Allegany,                     | McKean county.     |
| Williams, J. Franklin,  | Greensboro',                       | Greene county.     |
| Williams, John E.,      | Slatington,                        | Lehigh county.     |
| Williams, John K.,      | 2801 Penn avenue,                  | Pittsburgh.        |
| Williams, John M.,      | Elderton,                          | Armstrong county.  |
| Williams, Louis H.,     | Columbia,                          | Lancaster county.  |
| Williams, N. B.,        | Williamsport,                      | Lycoming county.   |
| Williams, Neri B.,      | 24 S. Main street,                 | Bethlehem.         |
| Williams, Reese D.,     | Plymouth,                          | Luzerne county.    |
| Williams, Richard J.,   | Ashland,                           | Schuylkill county. |
| Williams, Rudolph,      | Columbia,                          | Lancaster county.  |
| Williams, S. F.,        | Plymouth,                          | Luzerne county.    |
| Williams, Wm. J.,       | Plymouth,                          | Luzerne county.    |

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| Williams, W. T., . . . .     | Mt. Carmel, . . . . .               | Northumberland county. |
| Williamson, David, . . .     | Pittston, . . . . .                 | Luzerne county.        |
| Williamson, James, . . .     | Twenty-fifth and Jefferson streets, | Philadelphia.          |
| Williamson, James S., . .    | 213 Main street, . . . . .          | Norristown.            |
| Willits, Charles C., . . .   | Philipsburg, . . . . .              | Centre county.         |
| Wilson, Adam H., . . . .     | Bradford, . . . . .                 | McKean county.         |
| Wilson, A. J., . . . . .     | Glen Hope, . . . . .                | Clearfield county.     |
| Wilson, Albert H., . . . .   | Penn and Frankstown avenues,        | Pittsburgh.            |
| Wilson, Alexander, . . . .   | 1863 N. Front street, . . . . .     | Philadelphia.          |
| Wilson, Charles A., . . . .  | Big Run, . . . . .                  | Jefferson county.      |
| Wilson, Edward, . . . . .    | Plymouth, . . . . .                 | Luzerne county.        |
| Wilson, E. Ellsworth, . . .  | 3326 Germantown avenue, . . . .     | Philadelphia.          |
| Wilson, G. Banks, . . . . .  | Chester, . . . . .                  | Delaware county.       |
| Wilson, Jefferson H., . . .  | Beaver, . . . . .                   | Beaver county.         |
| Wilson, John M., . . . . .   | New Florence, . . . . .             | Westmoreland county.   |
| Wilson, Matthew J., . . . .  | 1863 N. Front street, . . . . .     | Philadelphia.          |
| Wilson, Robert, . . . . .    | Wyoming, . . . . .                  | Luzerne county.        |
| Wilt, Reuben A., . . . . .   | Greensburg, . . . . .               | Westmoreland county.   |
| Wiltberger, David S., . . .  | 233 N. Second street, . . . . .     | Philadelphia.          |
| Wiltberger, D. S., Jr., . .  | 233 N. Second street, . . . . .     | Philadelphia.          |
| Winebrenner, Geo. B., . . .  | 1000 S. Second street, . . . . .    | Philadelphia.          |
| Wineman, Elmer E., . . . .   | Blairsville, . . . . .              | Indiana county.        |
| Winfield, William H., . . .  | California, . . . . .               | Washington county.     |
| Wingard, W. F., . . . . .    | 1915 Seventh avenue, . . . . .      | Altoona.               |
| Winger, Franklin, . . . . .  | Rothsville, . . . . .               | Lancaster county.      |
| Winger, Henry C., . . . . .  | 430 State street, . . . . .         | Harrisburg.            |
| Wingert, Alphonsus L., . . . | 103 S. Centre street, . . . . .     | Pottsville.            |
| Winnett, F. B., . . . . .    | 89 N. Main street, . . . . .        | Washington.            |
| Winslow, Colburn T., . . . . | Brockwayville, . . . . .            | Jefferson county.      |
| Wiff, Herman, . . . . .      | 4923 Pascall street, . . . . .      | West Philadelphia.     |
| Wise, Frank B., . . . . .    | Jefferson, . . . . .                | Greene county.         |
| Wishart, Fred'k G., . . . .  | Moore's, . . . . .                  | Delaware county.       |
| Wissler, Benjamin A., . . .  | 3922 Germantown avenue, . . . .     | Philadelphia.          |
| Witherow, John H., . . . .   | 1410 Chestnut street, . . . . .     | Philadelphia.          |
| Withers, M. Augustus, . . .  | 271 High street, . . . . .          | Pottstown.             |
| Witmer, David L., . . . . .  | Fifth st. and Germantown av., . .   | Philadelphia.          |
| Witmer, E. H., . . . . .     | Neffsville, . . . . .               | Lancaster county.      |
| Witmer, Horace F., . . . .   | Fifth st. and Germantown av., . .   | Philadelphia.          |
| Witmer, Isaac M., . . . . .  | Conestoga, . . . . .                | Lancaster county.      |
| Witmer, W. Scott, . . . . .  | 962 Penn avenue, . . . . .          | Pittsburgh.            |
| Wittiger, Hugo O., . . . . . | 230 N. Penn street, . . . . .       | Allentown.             |
| Wolcott, A. Lincoln, . . . . | 245 N. Eleventh street, . . . . .   | Philadelphia.          |
| Wolerlagle, John A., . . . . | Curwensville, . . . . .             | Clearfield county.     |
| Wolf, A. Curtin, . . . . .   | Bedford, . . . . .                  | Bedford county.        |
| Wolf, Bertha, . . . . .      | East Berlin, . . . . .              | Adams county.          |
| Wolf, Charles S., . . . . .  | East Berlin, . . . . .              | Adams county.          |
| Wolf, Francis X., . . . . .  | Sixth and Spruce streets, . . . .   | Reading.               |
| Wolf, Frederick C., . . . .  | East Berlin, . . . . .              | Adams county.          |
| Wolfe, C. J., . . . . .      | 202 Market street, . . . . .        | Lewisburg.             |
| Wolfe, Jonathan, . . . . .   | 202 Market street, . . . . .        | Lewisburg.             |
| Wolfe, Nathaniel, . . . . .  | 54 Market street, . . . . .         | Wilkes-Barre.          |
| Wolfe, Samuel S., . . . . .  | Shippensburg, . . . . .             | Cumberland county.     |
| Woltersberger, Geo. W., . .  | Campbelltown, . . . . .             | Lebanon county.        |
| Wood, Edward V., . . . . .   | McKee's Rocks, . . . . .            | Allegheny county.      |
| Wood, Emerson J., . . . . .  | 1512 Peach street, . . . . .        | Erie.                  |
| Wood, Franklin D., . . . .   | Bradford, . . . . .                 | McKean county.         |
| Wood, James P., . . . . .    | Third and Pine streets, . . . . .   | Philadelphia.          |

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| Woods, Charles, . . . . .        | 69 Mill street, . . . . .                 | Danville.              |
| Woods, Charles G., . . . . .     | Sewickley, . . . . .                      | Allegheny county.      |
| Woodward, Albert B., . . . . .   | Tunkhannock, . . . . .                    | Wyoming county.        |
| Woodward, Charles B., . . . . .  | Great Bend, . . . . .                     | Susquehanna county.    |
| Woolcock, Thomas, . . . . .      | Mahanoy City, . . . . .                   | Schuylkill county.     |
| Woolridge, David R., . . . . .   | Woodland, . . . . .                       | Clearfield county.     |
| Work, Isaac S., . . . . .        | New Florence, . . . . .                   | Westmoreland county.   |
| Worthington, Isaac W., . . . . . | 32 N. Ninth street, . . . . .             | Philadelphia.          |
| Wray, Frank T., . . . . .        | Apollo, . . . . .                         | Armstrong county.      |
| Wray, Harry C., . . . . .        | Shireoaks, . . . . .                      | Washington county.     |
| Wray, William S., . . . . .      | Apollo, . . . . .                         | Armstrong county.      |
| Wright, Archibald W., . . . . .  | 1 N. Front street, . . . . .              | Philadelphia.          |
| Wright, George S. R., . . . . .  | 4501 Frankford avenue, . . . . .          | Philadelphia.          |
| Wright, James E., . . . . .      | 313 Diamond street, . . . . .             | Philadelphia.          |
| Wright, Samuel P., . . . . .     | 1800 Passyunk avenue, . . . . .           | Philadelphia.          |
| Wrigley, John T., . . . . .      | Kensington av. and Venango st., . . . . . | Philadelphia.          |
| Wuller, D. H., . . . . .         | 10 S. Main street, . . . . .              | Butler.                |
| Wuller, Joseph L., . . . . .     | 6 N. Main street, . . . . .               | Butler.                |
| Wurzel, Henry, . . . . .         | 50 Seventh avenue, . . . . .              | Pittsburgh.            |
| Wurzel, John, . . . . .          | 4506 Penn avenue, . . . . .               | Pittsburgh.            |
| Wykoff, John F., . . . . .       | Townville, . . . . .                      | Crawford county.       |
| Yanney, James, Jr., . . . . .    | Sandy Lake, . . . . .                     | Mercer county.         |
| Yarnall, Alben P., . . . . .     | Ashbourne, . . . . .                      | Montgomery county.     |
| Yarnall, Benjamin D., . . . . .  | Ashbourne, . . . . .                      | Montgomery county.     |
| Yates, William M., . . . . .     | Meadville, . . . . .                      | Crawford county.       |
| Yeakle, Atwood, . . . . .        | 600 De Kalb street, . . . . .             | Norristown.            |
| Yeakle, John, . . . . .          | 417 De Kalb street, . . . . .             | Norristown.            |
| Yealy, James F., . . . . .       | 1700 Mt. Vernon street, . . . . .         | Philadelphia.          |
| Yellig, Daniel C., . . . . .     | 2511 Sarah street, . . . . .              | Pittsburgh.            |
| Yorks, Clarence G., . . . . .    | 153 Pine street, . . . . .                | Williamsport.          |
| Yost, Geoffrey P., . . . . .     | 3 E. Market street, . . . . .             | York.                  |
| Yost, George P., . . . . .       | Glen Rock, . . . . .                      | York county.           |
| Yost, J. Miles, . . . . .        | Lock Haven, . . . . .                     | Clinton county.        |
| Yost, W. Oscar, . . . . .        | 4779 Germantown avenue, . . . . .         | Philadelphia.          |
| Young, Calvin K., . . . . .      | Lykens, . . . . .                         | Dauphin county.        |
| Young, Charles, . . . . .        | 65 Adams street, . . . . .                | Johnstown.             |
| Young, Charles L., . . . . .     | Wissahickon, . . . . .                    | Philadelphia.          |
| Young, E. B., . . . . .          | Monroetown, . . . . .                     | Bradford county.       |
| Young, James L., . . . . .       | New Castle, . . . . .                     | Lawrence county.       |
| Young, John, . . . . .           | Dingman's Ferry, . . . . .                | Pike county.           |
| Young, John H., . . . . .        | Freedom, . . . . .                        | Beaver county.         |
| Young, John K., . . . . .        | Bristol, . . . . .                        | Bucks county.          |
| Young, John L. B., . . . . .     | 2032 Nicholas street, . . . . .           | Philadelphia.          |
| Young, Joseph B., . . . . .      | Mount Carmel, . . . . .                   | Northumberland county. |
| Young, P. R. J., . . . . .       | 2300 Master street, . . . . .             | Philadelphia.          |
| Young, Robert T., . . . . .      | 2115 Fitzwater street, . . . . .          | Philadelphia.          |
| Young, Robert W., . . . . .      | Slatington, . . . . .                     | Lehigh county.         |
| Young, Samuel P., . . . . .      | 1106 Chestnut street, . . . . .           | Philadelphia.          |
| Young, William S., . . . . .     | Coatesville, . . . . .                    | Chester county.        |
| Zacharial, Gustav H., . . . . .  | 299 Ohio street, . . . . .                | Allegheny.             |
| Zacherle, Otto F., . . . . .     | 1722 Frankford avenue, . . . . .          | Philadelphia.          |
| Zeigler, Andrew W., . . . . .    | 2631 Carson street, . . . . .             | Pittsburgh.            |
| Zeller, Albert T., . . . . .     | 123 N. Fifteenth street, . . . . .        | Philadelphia.          |
| Zeller, J. Paul, . . . . .       | 900 S. Fifth street, . . . . .            | Philadelphia.          |
| Zeller, William S., . . . . .    | Bellefonte, . . . . .                     | Centre county.         |

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|----------------------|---------------------------|------------------|
| Zerr, Samuel N.,     | 1319 Vine street,         | Philadelphia.    |
| Ziegler, Philip M.,  | 526 Penn street,          | Reading.         |
| Ziegler, William H., | 2710 Richmond street,     | Philadelphia.    |
| Ziegler, W. L.,      | Steelton,                 | Dauphin county.  |
| Zimmerman, Gust. A., | 106 Clinton street,       | Johnstown.       |
| Zinck, Charles M.,   | Meadville,                | Crawford county. |
| Zoeller, Joseph P.,  | 112 S. Nineteenth street, | Pittsburgh.      |
| Zoellner, Oscar H.,  | 318 Race street,          | Philadelphia.    |

### Qualified Assistants of Pennsylvania.

|                         |                                |                         |
|-------------------------|--------------------------------|-------------------------|
| Adkins, Samuel B.,      | Shickshinny,                   | Luzerne county.         |
| Aiken, Clara,           | Berwyn,                        | Chester county.         |
| Albin, Samuel M.,       | 10 Sansom street,              | Allegheny.              |
| Albright, Jacob D.,     | 254 S. Tenth street,           | Philadelphia.           |
| Aldenderfer, Chas. D.,  | Greenville,                    | Mercer county.          |
| Alexander, William A.,  | Third and Howell streets,      | Chester.                |
| Alleman, Frank,         | Lancaster,                     | Lancaster county.       |
| Allen, Charles B.,      | 237 W. Market street,          | York.                   |
| Allen, George E.,       | Rochester,                     | Beaver county.          |
| Allen, John M.,         | 620 S. Washington square,      | Philadelphia.           |
| Allen, Orville E.,      | Coudersport,                   | Potter county.          |
| Allis, E. H.,           | Wyalusing,                     | Bradford county.        |
| Allison, William L.,    | Waynesburg,                    | Greene county.          |
| Amick, Ira P.,          | 2059 N. Thirteenth street,     | Philadelphia.           |
| Amsden, William C.,     | 1451 N. Thirteenth street,     | Philadelphia.           |
| Anderson, John H.,      | Third and George streets,      | Philadelphia.           |
| Anderson, John S.,      | 195 Arch street,               | Allegheny.              |
| Andriessen, Frederick,  | Third and Diamond streets,     | Beaver.                 |
| Angeny, Ferdinand G.,   | Darby,                         | Delaware county.        |
| Angle, J. W.,           | Wilmington,                    | New Castle county, Del. |
| Appel, Albert A.,       | Judson Place and Berks street, | Philadelphia.           |
| Apple, Franklin M.,     | 2862 N. Fifth street,          | Philadelphia.           |
| Apple, Samuel J.,       | 615 Philadelphia street,       | Indiana.                |
| Armstrong, Eugene C.,   | Chester,                       | Delaware county.        |
| Arn, Gottfried,         | Braddock,                      | Allegheny county.       |
| Arnold, Henry P.,       | 910 N. Twenty-sixth street,    | Philadelphia.           |
| Arnold, John P.,        | 237 W. Market street,          | York.                   |
| Ashe, Henry P.,         | 69 W. Chestnut street,         | Washington.             |
| Axtel, Allen R.,        | Troy,                          | Bradford county.        |
| Bacon, Harry A.,        | Seventh and Brown streets,     | Philadelphia.           |
| Baker, Charles R.,      | Greensburg,                    | Westmoreland county.    |
| Baker, Thomas J.,       | 4000 Chestnut street,          | Philadelphia.           |
| Baker, William G., Jr., | Lancaster,                     | Lancaster county.       |
| Baker, William J.,      | Hollidaysburg,                 | Blair county.           |
| Balbirnie, C. D. B.,    | 723 S. Ninth street,           | Philadelphia.           |
| Baldwin, Annie M.,      | Kennett Square,                | Chester county.         |
| Barber, Blakely H.,     | Pittston,                      | Luzerne county.         |
| Barlement, Philip L.,   | 2632 N. Seventh street,        | Philadelphia.           |



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|--------------------------|------------------------------|---------------------|
| Barnard, Henry S.,       | Ashland,                     | Schuylkill county.  |
| Barnard, William D.,     | 214 N. Twelfth street,       | Philadelphia.       |
| Barnes, Harry W.,        | Third and Kerlin streets,    | Chester.            |
| Barnhart, Samuel W.,     | Oil City,                    | Venango county.     |
| Barnitz, Lincoln G.,     | Catawissa,                   | Columbia county.    |
| Barns, Leslie E.,        | Campdown,                    | Bradford county.    |
| Barr, William D.,        | East Brady,                  | Clarion county.     |
| Bartsch, George J.,      | 65 Rebecca street,           | Allegheny.          |
| Barwig, Gustavus G.,     | 2024 N. Second street,       | Philadelphia.       |
| Baskin, Mortimer H.,     | 401 Market street,           | Chester.            |
| Bauer, George L.,        | 1419 Clarion street,         | Philadelphia.       |
| Bauer, Louis D.,         | 635 N. Fifth street,         | Philadelphia.       |
| Baumeister, William,     | 1023 Irving avenue,          | Scranton.           |
| Baumgartner, Wm. J.,     | 1 W. Girard avenue,          | Philadelphia.       |
| Bayard, George G.,       | Bellefonte,                  | Centre county.      |
| Beaver, Frank W.,        | 308 S. Hyde Park avenue,     | Scranton.           |
| Beazell, William H.,     | 233 Centre avenue,           | Pittsburgh.         |
| Bechtel, Allen K.,       | Schwenkville,                | Montgomery county.  |
| Bechtold, Egedius L.,    | 74 Federal street,           | Allegheny.          |
| Beck, Robert W.,         | Sharon,                      | Mercer county.      |
| Beers, Benjamin F.,      | 142 Stanton street,          | Wilkes-Barre.       |
| Beetem, Charles H.,      | Columbia,                    | Lancaster county.   |
| Behm, J. Strickler,      | 424 N. Ninth street,         | Lebanon.            |
| Beistel, Judson E.,      | 243 Fifth avenue,            | Pittsburgh.         |
| Bender, Edward A.,       | 4099 Lancaster avenue,       | Philadelphia.       |
| Bender, Fannie C.,       | Jonestown,                   | Lebanon county.     |
| Bender, John J.,         | 467 E. Girard avenue,        | Philadelphia.       |
| Benedict, John P.,       | 113 Federal street,          | Allegheny.          |
| Bennett, Daniel M.,      | McKeesport,                  | Allegheny county.   |
| Bennett, F. G.,          | New Washington,              | Clearfield county.  |
| Berkemeyer, F. M.,       | 2601 N. Sixth street,        | Philadelphia.       |
| Berkstresser, Watson J., | Huntingdon,                  | Huntingdon county.  |
| Bietsch, George E.,      | 2327 Brown street,           | Philadelphia.       |
| Bilderbach, Jos. B.,     | Fortieth and Locust streets, | Philadelphia.       |
| Bilheimer, John J.,      | 432 Eustis street,           | Philadelphia.       |
| Birch, Harry R.,         | 528 Arch street,             | Philadelphia.       |
| Birch, Samuel B.,        | Greensboro',                 | Greene county.      |
| Birchard, C. Frank,      | Baldwin,                     | Butler county.      |
| Bischoff, Louis J.,      | 64 Troy Hill road,           | Allegheny.          |
| Bissell, John R.,        | Mahanoy City,                | Schuylkill county.  |
| Black, Caroline C.,      | Coultersville,               | Columbia county.    |
| Black, Hannah,           | Boston,                      | Allegheny county.   |
| Black, J. N.,            | Karns City,                  | Butler county.      |
| Blackman, Augustus S.,   | Le Raysville,                | Bradford county.    |
| Blackwood, Russell T.,   | Bristol,                     | Bucks county.       |
| Blair, E. A.,            | Franklin Forks,              | Susquehanna county. |
| Blew, Curtis E.,         | 353 Beaver avenue,           | Allegheny.          |
| Blithe, Henry A.,        | 3212 Market street,          | Philadelphia.       |
| Blomer, Caroline A.,     | 301 Dickinson street,        | Philadelphia.       |
| Bloomfield, Pierce,      | Riceville,                   | Crawford county.    |
| Blose, Joseph C.,        | 614 Walnut street,           | McKeesport.         |
| Boggs, Alexander W.,     | 187 Federal street,          | Allegheny.          |
| Bohnen, William L.,      | 1601 Carson street,          | Pittsburgh.         |
| Bolar, Harry W.,         | Indiana,                     | Indiana county.     |
| Bollinger, Preston M.,   | Hanover,                     | York county.        |
| Bolton, Joseph P.,       | 23 Jefferson street,         | Germantown.         |
| Boltz, Elias K.,         | 269 S. Tenth street,         | Reading.            |

|                        |                              |                      |
|------------------------|------------------------------|----------------------|
| Bordner, William H.,   | 2068 E. Hull street,         | Kensington.          |
| Boss, William H.,      | Townville,                   | Crawford county.     |
| Rouse, Harry I.,       | Milesburg,                   | Centre county.       |
| Boush, Albert L.,      | 331 N. Eleventh street,      | Philadelphia.        |
| Bower, Robert H.,      | Arnot,                       | Tioga county.        |
| Bowman, Fred'k K.,     | 1949 N. Eleventh street,     | Philadelphia.        |
| Bowman, George M.,     | 37 S. Laurel street,         | Bridgeton.           |
| Bowman, William F.,    | 241 Orange street,           | Reading.             |
| Boyd, George S.,       | Waterford,                   | Erie county.         |
| Boyer, Allen W.,       | 730 N. Sixteenth street,     | Philadelphia.        |
| Boyer, Franklin N.,    | 35 S. Fourth street,         | Reading.             |
| Boyles, J. C.,         | Du Bois,                     | Clearfield county.   |
| Bradenbaugh, Thos. F., | Millersburg,                 | Dauphin county.      |
| Bradley, William N.,   | 1155 S. Eighth street,       | Philadelphia.        |
| Brallier, Josiah Y.,   | Somerset,                    | Somerset county.     |
| Brallier, Mary R.,     | Lykens,                      | Dauphin county.      |
| Brallier, William Q.,  | Lykens,                      | Dauphin county.      |
| Brannan, Charles N.,   | 67 Federal extension,        | Allegheny.           |
| Breidinger, Lewis A.,  | Ninth and Race streets,      | Philadelphia.        |
| Breisch, William H.,   | White Haven,                 | Luzerne county.      |
| Brellocks, Fred'k J.,  | Manayunk,                    | Philadelphia.        |
| Breneman, Edward L.,   | Gettysburg,                  | Adams county.        |
| Brennan, John T.,      | 2722 Somerset street,        | Philadelphia.        |
| Brice, William O.,     | Seventh and Spruce streets,  | Philadelphia.        |
| Bricker, Joseph M.,    | Somerset,                    | Somerset county.     |
| Briggs, Forest W.,     | Shickshinny,                 | Luzerne county.      |
| Bright, Harry H.,      | 2455 Howard street,          | Philadelphia.        |
| Bright, William W.,    | Ridge and Girard avenues,    | Philadelphia.        |
| Brittan, John,         | 62 E. Jefferson street,      | Butler.              |
| Brockbank, John I.,    | Du Bois,                     | Clearfield county.   |
| Brown, Albert L.,      | 829 Chestnut street,         | Reading.             |
| Brown, Anthony P.,     | Carbondale,                  | Lackawanna county.   |
| Brown, Charles,        | 1914 N. Seventeenth street,  | Philadelphia.        |
| Brown, Charles O.,     | 50 N. Eleventh street,       | Reading.             |
| Brown, Frank L.,       | 841 Cumberland street,       | Lebanon.             |
| Brown, Howard A.,      | Irwin,                       | Westmoreland county. |
| Brown, William S.,     | Penfield,                    | Clearfield county.   |
| Brubaker, Frank B.,    | Mifflinburg,                 | Union county.        |
| Bruhns, Julius,        | 3844 Haverford avenue,       | Philadelphia.        |
| Bryner, George W.,     | 56 Main street,              | Connellsville.       |
| Bryson, Harry M.,      | Quarryville,                 | Lancaster county.    |
| Buckhart, Franklin,    | 23 W. King street,           | Lancaster.           |
| Bugg, Z. W.,           | 225 N. Eleventh street,      | Philadelphia.        |
| Bulger, Howard H.,     | Brownsville,                 | Fayette county.      |
| Burberg, John E.,      | 71 Forty-third street,       | Pittsburgh.          |
| Burchfield, Wm. S.,    | Millvale,                    | Allegheny county.    |
| Burdick, Archibald W., | 406 Main street,             | Carbondale.          |
| Burgess, Ellis B.,     | 16 N. Thirty-seventh street, | Philadelphia.        |
| Burget, Harry E.,      | Fifth and Dauphin streets,   | Philadelphia.        |
| Burgoon, William H.,   | 1322 Tenth avenue,           | Altoona.             |
| Burnett, William,      | 500 Christian street,        | Philadelphia.        |
| Burns, Augusta C.,     | Montrose,                    | Susquehanna county.  |
| Butz, Alfred T.,       | South Chester,               | Delaware county.     |
| Byrne, Daniel,         | 333 Main street,             | Carbondale.          |

Cadmus, Alfred B., 1647 Latona street, Philadelphia.

Caffrey, James P., 171 Hazle avenue, Wilkes-Barre.

|                         |                                    |                          |
|-------------------------|------------------------------------|--------------------------|
| Caldwell, Florence M.,  | 3819 Lancaster avenue,             | Philadelphia.            |
| Cale, William T.,       | Columbus,                          | Burlington county, N. J. |
| Calhoun, Albert R.,     | 518 S. Nineteenth street,          | Philadelphia.            |
| Calhoun, William M.,    | Verona,                            | Allegheny county.        |
| Calvert, John M.,       | Millerstown,                       | Butler county.           |
| Cameron, Elmer L.,      | 19 S. Main street,                 | Chambersburg.            |
| Camp, B. Edwin,         | Fourth and Main streets,           | Monongahela City.        |
| Campbell, Clarence H.,  | 2041 Pine street,                  | Philadelphia.            |
| Campbell, Joseph,       | Chestnut Hill,                     | Philadelphia.            |
| Campbell, Milton,       | South Bethlehem,                   | Northampton county.      |
| Campbell, Theodore,     | 944 N. Second street,              | Philadelphia.            |
| Campbell, Wm. A.,       | Oil City,                          | Venango county.          |
| Caufield, Kate B.,      | Corydon,                           | Warren county.           |
| Carey, William J.,      | Emporium,                          | Cameron county.          |
| Carman, Frank H.,       | 231 N. Twelfth street,             | Philadelphia.            |
| Carrier, Ira,           | Punxsutawney,                      | Jefferson county.        |
| Carritte, Clarence E.,  | 1022 Race street,                  | Philadelphia.            |
| Casey, Harry E.,        | 1514 Dean street,                  | Philadelphia.            |
| Cassidy, John F.,       | 770 Passyunk avenue,               | Philadelphia.            |
| Chalfant, William W.,   | 3928 Market street,                | Philadelphia.            |
| Chandler, Charles F.,   | 1945 N. Eleventh street,           | Philadelphia.            |
| Charles, Miner E.,      | 31 Main street,                    | Plymouth.                |
| Christ, Franz,          | 2809 Warnock street,               | Philadelphia.            |
| Christman, Albert S.,   | 737 S. Eighth street,              | Allentown.               |
| Clabaugh, Edgar M.,     | Altoona,                           | Blair county.            |
| Clapham, Benson G.,     | Cumberland and Emerald streets,    | Philadelphia.            |
| Clark, George B.,       | 177 Second avenue,                 | Pittsburgh.              |
| Clark, William G.,      | Ridge and Girard avenues,          | Philadelphia.            |
| Cochran, John C.,       | Big Run,                           | Jefferson county.        |
| Cochran, Levi B.,       | University of Pennsylvania,        | Philadelphia.            |
| Codville, William L.,   | 2622 E. Dauphin street,            | Philadelphia.            |
| Coffin, Roscoe L.,      | 830 Pennock street,                | Philadelphia.            |
| Colbert, Walter E.,     | 32 S. Seneca street,               | Oil City.                |
| Coldsmith, Charles F.,  | Mount Pleasant,                    | Westmoreland county.     |
| Cole, Percy L.,         | Dunmore,                           | Lackawanna county.       |
| Coleman, Edward W.,     | Canonsburg,                        | Washington county.       |
| Collings, Walter N.,    | Eighth and Noble streets,          | Philadelphia.            |
| Collins, Thomas J.,     | 327 Carson street,                 | Oil City.                |
| Colquhoun, John H.,     | Upland,                            | Delaware county.         |
| Cowles, Henry F.,       | 3610 Fifth avenue,                 | Pittsburgh.              |
| Comfort, Newton C.,     | 4434 Lancaster avenue,             | Philadelphia.            |
| Confer, D. Clarence,    | Duncansville,                      | Blair county.            |
| Conley, Frank K.,       | Shamokin,                          | Northumberland county.   |
| Conover, Samuel H.,     | 2017 N. Eleventh street,           | Philadelphia.            |
| Cook, Robert S.,        | 2213 St. Alban's Place,            | Philadelphia.            |
| Cooke, Miller W.,       | 73 Western avenue,                 | Allegheny.               |
| Coon, Maurice J.,       | Plymouth,                          | Luzerne county.          |
| Cooper, Herbert,        | 5033 Germantown avenue,            | Philadelphia.            |
| Copeland, George H.,    | Renovo,                            | Clinton county.          |
| Copeland, Harry T.,     | Patterson,                         | Junia county.            |
| Copland, Maud P.,       | 131 Broad street,                  | Harrisburg.              |
| Corban, Benjamin S.,    | Bradford,                          | McKean county.           |
| Cordes, Frank,          | Homewood,                          | Beaver county.           |
| Cornelius, Clarence N., | Seventh and Poplar streets,        | Philadelphia.            |
| Cornogg, Samuel S.,     | Ward,                              | Delaware county.         |
| Corrie, Emma,           | Eleventh and McKean streets,       | Philadelphia.            |
| Coslin, John R.,        | Forty-third st. and Fairmount av., | Philadelphia.            |

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| Cottingham, Ambrose,     | 341 Bushkill street,            | Easton.              |
| Coughenour, David G.,    | Stauffer,                       | Westmoreland county. |
| Cox, Harriet F.,         | 4516 Lancaster avenue,          | Philadelphia.        |
| Cox, Harry L.,           | Ephrata,                        | Lancaster county.    |
| Cox, Russell L.,         | Schuylkill Haven,               | Schuylkill county.   |
| Craig, Harry F.,         | St. Petersburg,                 | Clarion county.      |
| Craig, Samuel B.,        | St. Petersburg,                 | Clarion county.      |
| Craig, Thomas B.,        | Freedom,                        | Beaver county.       |
| Crane, William H.,       | 208 Girard avenue,              | Philadelphia.        |
| Crass, John H.,          | 3728 Lancaster avenue,          | Philadelphia.        |
| Crawford, Archibald D.,  | Norristown,                     | Montgomery county.   |
| Crawford, Oscar,         | 5 S. Third street,              | Easton.              |
| Crawford, Walter B.,     | Chambersburg,                   | Franklin county.     |
| Croft, William J.,       | 239 S. Eleventh street,         | Philadelphia.        |
| Crothers, James L.,      | 1634 Columbia avenue,           | Philadelphia.        |
| Culin, Walter,           | 641 N. Sixteenth street,        | Philadelphia.        |
| Cullen, James K.,        | 2902 Richmond street,           | Philadelphia.        |
| Curriden, George A.,     | Chambersburg,                   | Franklin county.     |
| Cushen, Harry R.,        | 1700 Mt. Vernon street,         | Philadelphia.        |
| Cyphers, Frank R.,       | Turtle Creek,                   | Allegheny county.    |
| Dalton, David,           | Upland,                         | Delaware county.     |
| Daniels, George E.,      | 212 N. Tenth street,            | Philadelphia.        |
| Darbaker, Isaac K.,      | 255 Federal street,             | Allegheny.           |
| Darlington, Nettie E.,   | Sugar Grove,                    | Warren county.       |
| Davis, Alvah M.,         | 615 Swede street,               | Norristown.          |
| Davis, B. Frank,         | 2722 N. Eleventh street,        | Philadelphia.        |
| Davis, Bruce,            | Bradford,                       | McKean county.       |
| Davis, Edward,           | Lansford,                       | Carbon county.       |
| Davis, Elias,            | Wadesville,                     | Schuylkill county.   |
| Davis, Guyon L.,         | Holidaysburg,                   | Blair county.        |
| Davis, Harry M.,         | 6001 Vine street,               | Philadelphia.        |
| Davis, Hugh F.,          | 25 S. Centre street,            | Pottsville.          |
| Davis, Ira W.,           | Ebensburg,                      | Cambria county.      |
| Davis, James F.,         | 634 Preble avenue,              | Allegheny.           |
| Davis, Lewis E.,         | Centralia,                      | Columbia county.     |
| Davis, L. F.,            | Mount Union,                    | Huntingdon county.   |
| Davis, William G.,       | Summit Hill,                    | Carbon county.       |
| Dean, Malcolm G.,        | 35 N. Twelfth street,           | Philadelphia.        |
| Decker, Gertrude,        | 107 N. Main street,             | Scranton.            |
| Decker, H. P.,           | 107 N. Main street,             | Scranton.            |
| Deen, William L.,        | 525 E. Chestnut street,         | Lancaster.           |
| Deibert, William H.,     | 1829 S. Second street,          | Philadelphia.        |
| Dengler, George L.,      | 242 S. Ninth street,            | Reading.             |
| Dennes, Elmer S.,        | 547 N. Lime street,             | Lancaster.           |
| De Normandie, F. R.,     | 59 S. Main street,              | Washington.          |
| Derr, William G.,        | Sharon,                         | Mercer county.       |
| Devine, Oliver C.,       | 1823 Dickinson street,          | Philadelphia.        |
| Deweese, Jacob H.,       | 514 Swede street,               | Norristown.          |
| Dickinson, George S.,    | 711 State street,               | Erie.                |
| Dickson, Samuel C.,      | McConnellsburg,                 | Fulton county.       |
| Diefenderfer, Victor H., | Greenville,                     | Mercer county.       |
| Dierolf, Charles B.,     | Mount Joy,                      | Lancaster county.    |
| Dillon, Robert,          | Coraopolis,                     | Allegheny county.    |
| Dimon, Charles A.,       | 1613 Chestnut street,           | Philadelphia.        |
| Dirmitt, Mrs. Jennie,    | Nineteenth and Federal streets, | Philadelphia.        |
| Dodge, Cyrenius M.,      | Honesdale,                      | Wayne county.        |



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|-----------------------------|-------------------------------------------|------------------------|
| Donaghue, Vincent, . .      | Girardville, . . . . .                    | Schuylkill county.     |
| Donaldson, Frank P., .      | Canonsburg, . . . . .                     | Washington county.     |
| Donecker, Edwin A., .       | 1101 Arch street, . . . . .               | Philadelphia.          |
| Donovan, John B., . .       | Laceyville, . . . . .                     | Wyoming county.        |
| Dornsife, Ulysses E., .     | Tunkhannock, . . . . .                    | Wyoming county.        |
| Doty, John B., . . . .      | 1301 Market street, . . . . .             | Philadelphia.          |
| Dougherty, J. Ellis, . .    | 1340 S. Tenth street, . . . . .           | Philadelphia.          |
| Dougherty, M. M., . .       | Mechanicsburg, . . . . .                  | Cumberland county.     |
| Douglas, James C., . .      | Latrobe, . . . . .                        | Westmoreland county.   |
| Douthett, George S., . .    | Oil City, . . . . .                       | Venango county.        |
| Drake, John W., . . . .     | Titusville, . . . . .                     | Crawford county.       |
| Dreisbach, Albert, . . .    | 51 S. Fifth street, . . . . .             | Easton.                |
| Dubbs, Robert L., . . .     | 2801 Girard avenue, . . . . .             | Philadelphia.          |
| Dubois, Samuel C., . . .    | 1712 Norris street, . . . . .             | Philadelphia.          |
| Duer, Milton A., . . . .    | Murysville, . . . . .                     | Westmoreland county.   |
| Duff, Harry G., . . . .     | New Castle, . . . . .                     | Lawrence county.       |
| Duncan, Frederick G., . .   | Sharon, . . . . .                         | Mercer county.         |
| Dunham, Frank H., . . .     | Chicago, . . . . .                        | Illinois.              |
| Dunlavy, M. J., . . . .     | Sligo, . . . . .                          | Clarion county.        |
| Dunmire, Harry D., . . .    | West Middlesex, . . . . .                 | Mercer county.         |
| Dunn, Frederick V., . . .   | Tenth and Mifflin streets, . . . . .      | Philadelphia.          |
| Dunwiddie, William A., .    | 215 N. Front street, . . . . .            | Philadelphia.          |
| Durham, John M., . . . .    | 18 S. Fifth street, . . . . .             | Reading.               |
| Dutt, Frederick A., . . .   | 832 Windsor square, . . . . .             | Philadelphia.          |
|                             |                                           |                        |
| Eberhardt, William F., .    | 625 N. Second street, . . . . .           | Philadelphia.          |
| Eberle, John, . . . . .     | 1018 State street, . . . . .              | Erie.                  |
| Eberle, Joseph H., . . .    | 4779 Germantown avenue, . . . . .         | Philadelphia.          |
| Eberman, Mary G., . . .     | California, . . . . .                     | Washington county.     |
| Eby, Benjamin S., . . . .   | Newport, . . . . .                        | Perry county.          |
| Eby, Edwin S., . . . . .    | Newport, . . . . .                        | Perry county.          |
| Eby, Mrs. Kate R., . . .    | Newport, . . . . .                        | Perry county.          |
| Eckles, Charles A., . . .   | 600 S. Broad street, . . . . .            | Philadelphia.          |
| Edgar, James B., . . . .    | New Brighton, . . . . .                   | Beaver county.         |
| Edmonds, Howard, . . . .    | Shamokin, . . . . .                       | Northumberland county. |
| Eft, Frederick, . . . . .   | Twelfth and Vine streets, . . . . .       | Philadelphia.          |
| Eggers, Howard C., . . .    | 172 Ohio street, . . . . .                | Allegheny.             |
| Eisenhart, Edwin K., . .    | 3875 Aspen street, . . . . .              | Philadelphia.          |
| Eisenhart, Foster B., . .   | Seventeenth and Norris streets, . . . . . | Philadelphia.          |
| Eldredge, Clarence S., . .  | 1922 Mt. Vernon street, . . . . .         | Philadelphia.          |
| Elliott, Arthur H., . . .   | Mansfield, . . . . .                      | Tioga county.          |
| Elliott, James B., . . . .  | Houtzdale, . . . . .                      | Clearfield county.     |
| Elliott, Walter R., . . . . | Renovo, . . . . .                         | Clinton county.        |
| Ellhott, W. M., . . . . .   | Mercersburg, . . . . .                    | Franklin county.       |
| Elrick, R. E., . . . . .    | Harrisville, . . . . .                    | Butler county.         |
| Elston, Clarence W., . . .  | Downingtown, . . . . .                    | Chester county.        |
| Ely, Benjamin C., . . . .   | Girard, . . . . .                         | Erie county.           |
| Emery, David H., . . . .    | Towanda, . . . . .                        | Bradford county.       |
| Ensign, Edward O., . . .    | Waymart, . . . . .                        | Wayne county.          |
| Ensminger, Sam'l C. D., .   | Manheim, . . . . .                        | Lancaster county.      |
| Eppstein, Jacob, . . . . .  | 1401 N. Seventh street, . . . . .         | Philadelphia.          |
| Essick, Clara B., . . . .   | Picture Rocks, . . . . .                  | Lycoming county.       |
| Ettele, George A., . . . .  | Middletown, . . . . .                     | Dauphin county.        |
| Evans, Thomas R., . . . .   | Plainsville, . . . . .                    | Luzerne county.        |
| Evans, William, . . . . .   | 2300 Amber street, . . . . .              | Philadelphia.          |
| Evans, William H., . . . .  | Ashley, . . . . .                         | Luzerne county.        |
| Eyre, William H., . . . .   | Third and Kerlin streets, . . . . .       | Chester.               |

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| Fagley, Roscoe C.,    | Mount Carmel,                       | Northumberland county. |
| Fangboner, Forest P., | East Stroudsburg,                   | Monroe county.         |
| Faries, Joseph B.,    | Passyunk avenue,                    | Philadelphia.          |
| Faul, John A.,        | 528 Fifth avenue,                   | Pittsburgh.            |
| Faust, William S.,    | Sunbury,                            | Northumberland county. |
| Fehr, George W.,      | 1920 Race street,                   | Philadelphia.          |
| Ferguson, Enoch P.,   | Coatesville,                        | Chester county.        |
| Ferguson, James A.,   | Howard and Thompson streets,        | Philadelphia.          |
| Fernsler, Edward S.,  | 22 N. Centre street,                | Pottsville.            |
| Fessler, T. Addison,  | 1201 Spruce street,                 | Philadelphia.          |
| Fetter, Thomas S.,    | Shippensburg,                       | Cumberland county.     |
| Field, Claude,        | 239 N. Eleventh street,             | Philadelphia.          |
| Fies, John H.,        | 527 W. Orange street,               | Lancaster.             |
| Filson, William B.,   | 32 S. Seneca street,                | Oil City.              |
| Finkelpearl, Joseph,  | 243 Fifth avenue,                   | Pittsburgh.            |
| Finley, Ardon,        | New Brighton,                       | Beaver county.         |
| Fischer, K. Ludwig,   | Glenlyon,                           | Luzerne county.        |
| Fischler, Ernest M.,  | Gaines,                             | Tioga county.          |
| Fisher, Edmund K.,    | 2837 Kensington avenue,             | Philadelphia.          |
| Fisher Joshua F.,     | Catawissa,                          | Columbia county.       |
| Fister, Charles W.,   | Hamburg,                            | Berks county.          |
| Fithian, Margaret J., | Grove City,                         | Mercer county.         |
| Fitzgerald, R. V.,    | 21 W. Market street,                | Wilkes-Barre.          |
| Flagler, Steward S.,  | Stroudsburg,                        | Monroe county.         |
| Flecher, Anthony P.,  | Fryburg,                            | Clarion county.        |
| Flecher, George,      | Fryburg,                            | Clarion county.        |
| Fleming, James R.,    | Forest City,                        | Susquehanna county.    |
| Fletcher, George M.,  | 424 W. Eighteenth street,           | Erie.                  |
| Flora, George E.,     | Bangor,                             | Northampton county.    |
| Flower, David E.,     | Albion,                             | Erie county.           |
| Flynn, Frank G.,      | Conneautville,                      | Crawford county.       |
| Foncar, Charles R.,   | 12 State street,                    | Oil City.              |
| Foote, Sarah J.,      | Petrolia,                           | Butler county.         |
| Ford, Michael,        | Pittston,                           | Luzerne county.        |
| Forrest, Harry G.,    | Greenville,                         | Mercer county.         |
| Forst, William H.,    | New Castle,                         | Lawrence county.       |
| Forsythe, B. S.,      | Dawson,                             | Fayette county.        |
| Forthman, James M.,   | Waynesboro',                        | Franklin county.       |
| Foster, Joseph S.,    | Petrolia,                           | Butler county.         |
| Foulkes, Stephen H.,  | 2246 Ridge avenue,                  | Philadelphia.          |
| Fowler, Frank C.,     | Meadville,                          | Crawford county.       |
| Fox, Charles F.,      | 166 Arlington avenue,               | Pittsburgh.            |
| Frank, Harrison E.,   | 513 Race street,                    | Harrisburg.            |
| Frankelberger, A. J., | 3101 Powelton avenue,               | Philadelphia.          |
| Frantz, William H.,   | Coal Centre,                        | Washington county.     |
| Fraunfelder, R. D.,   | Seventh and Diamond streets,        | Easton.                |
| Fredericks, Harry,    | Forty-first street and Lane avenue, | Philadelphia.          |
| Freeman, Clayton L.,  | Twentieth and Berks streets,        | Philadelphia.          |
| French, Adelbert P.,  | Susquehanna,                        | Susquehanna county.    |
| French, Edwin A.,     | New Milford,                        | Susquehanna county.    |
| French, Francis F.,   | 125 Chestnut Place,                 | Philadelphia.          |
| Fretz, Emeline R.,    | Fleetwood,                          | Berks county.          |
| Frey, Aaron K.,       | 116 N. Queen street,                | Lancaster.             |
| Frontz, Edward E.,    | 1236 S. Eighth street,              | Philadelphia.          |
| Fry, Harry E.,        | Forks ville,                        | Sullivan county.       |
| Fry, Nelson B.,       | 1400 Spruce street,                 | Philadelphia.          |
| Fueller, Howard,      | 201 Franklin street,                | Allegheny.             |

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| Fulton, Etta L., . . . .    | New London, . . . . .                         | Chester county.      |
| Furman, Edward F., . .      | 103 N. Main street, . . . . .                 | Shenandoah.          |
| Furman, Joseph H., . .      | 1113 Arch street, . . . . .                   | Philadelphia.        |
| Gabell, Cromwell P., . .    | 1123 Arch street, . . . . .                   | Philadelphia.        |
| Gabler, Theodore J., . .    | Manayunk, . . . . .                           | Philadelphia.        |
| Gabriel, Mrs. Alice G., .   | Spartansburg, . . . . .                       | Crawford county.     |
| Galer, Frank A., . . . .    | Houtzdale, . . . . .                          | Clearfield county.   |
| Ganster, William F., . .    | 212 S. Ninth street, . . . . .                | Reading.             |
| Garber, Frank, . . . . .    | Greenville, . . . . .                         | Mercer county.       |
| Gardner, Eugene, . . . .    | York, . . . . .                               | York county.         |
| Gardner, Robert, J., . .    | 614 S. Sixth street, . . . . .                | Philadelphia.        |
| Gartland, Albert A., . .    | 703 Sixth avenue, . . . . .                   | Altouna.             |
| George, Alfred, . . . . .   | Hanover, . . . . .                            | York county.         |
| George, Thomas V., . . .    | Cambridgeboro', . . . . .                     | Crawford county.     |
| Gerhart, William H., . .    | Musgrove avenue, . . . . .                    | Germantown.          |
| German, Ida, . . . . .      | Southampton, . . . . .                        | Bucks county.        |
| Gervais, Wm. J. N., . . .   | Fifth and Spruce streets, . . . . .           | Philadelphia.        |
| Gery, Ella M., . . . . .    | Coopersburg, . . . . .                        | Lehigh county.       |
| Gibbony, David C., . . .    | 1126 Vine street, . . . . .                   | Philadelphia.        |
| Gilbert, Harry, . . . . .   | Carmichaels, . . . . .                        | Greene county.       |
| Gilbert, Mary A., . . . .   | Harrison Valley, . . . . .                    | Potter county.       |
| Gildner, Mary A., . . . .   | Rockwood, . . . . .                           | Somerset county.     |
| Gillaspie, Martin S., . .   | Edinboro', . . . . .                          | Erie county.         |
| Gillespie, Charles D., . .  | Freeport, . . . . .                           | Armstrong county.    |
| Gillespie, E. Neal, . . . . | Freeport, . . . . .                           | Armstrong county.    |
| Gillespie, Frank, . . . .   | Freeport, . . . . .                           | Armstrong county.    |
| Gillis, Claude B., . . . .  | Kane, . . . . .                               | McKean county.       |
| Givvin, Jesse D., . . . .   | Chelten avenue and Chew street, . . . . .     | Germantown.          |
| Glenk, Robert, . . . . .    | 755 Huntingdon street, . . . . .              | Philadelphia.        |
| Glover, Oliver W. H., . .   | Laurelton, . . . . .                          | Union county.        |
| Goehring, John G., . . . .  | West Newton, . . . . .                        | Westmoreland county. |
| Goll, Philip, . . . . .     | 1427 E. Susquehanna avenue, . . . . .         | Philadelphia.        |
| Good, Benjamin M., . . .    | 251 E. Frederick street, . . . . .            | Lancaster.           |
| Good, James R., . . . . .   | Townville, . . . . .                          | Crawford county.     |
| Good, Wm. F. P., . . . .    | 167 Hamilton street, . . . . .                | Allentown.           |
| Gooder, Albert, . . . . .   | Brookville, . . . . .                         | Jefferson county.    |
| Goos, Charles, . . . . .    | 2452 N. Second street, . . . . .              | Philadelphia.        |
| Gordon, Frank, . . . . .    | West Pittston, . . . . .                      | Luzerne county.      |
| Gordon, Jennie, . . . . .   | 800 Preston street, . . . . .                 | Philadelphia.        |
| Gordon, William T., . . .   | Rochester, . . . . .                          | Beaver county.       |
| Gorrell, Benj. H., Jr., . . | 1210 Mt. Vernon street, . . . . .             | Philadelphia.        |
| Gosh, William E., . . . .   | 231 N. Twelfth street, . . . . .              | Philadelphia.        |
| Graham, G. P. G., . . . .   | Homer City, . . . . .                         | Indiana county.      |
| Graham, Harry C., . . . .   | Forty-fourth st. and Lancaster av., . . . . . | Philadelphia.        |
| Grant, Florence E., . . . . | Monongahela City, . . . . .                   | Washington county.   |
| Graves, John M., . . . .    | Jermyn, . . . . .                             | Lackawanna county.   |
| Gray, Edwin F., . . . . .   | 100 Cooper street, . . . . .                  | Camden, N. J.        |
| Green, Emma T., . . . . .   | 3250 Ridge avenue, . . . . .                  | Philadelphia.        |
| Green, Philip Henry, . . .  | Reading, . . . . .                            | Berks county.        |
| Greenawald, Mrs. B. S., . . | Chester, . . . . .                            | Delaware county.     |
| Greenfield, Lewis T., . . . | 800 Walnut street, . . . . .                  | Philadelphia.        |
| Greenman, Irwin H., . . .   | New Hamburg, . . . . .                        | Mercer county.       |
| Greer, Harry L., . . . . .  | Greensburg, . . . . .                         | Westmoreland county. |
| Gressle, Franklin M., . . . | 387 S. Centre street, . . . . .               | Pottsville.          |
| Griffin, William, . . . . . | 1432 Monsey avenue, . . . . .                 | Scranton.            |
| Griffith, Joseph T., . . .  | Ridley Park, . . . . .                        | Delaware county.     |

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| Groblewski, Albert G., | Glenlyon,                       | Luzerne county.          |
| Grosser, Claude R.,    | 142 E. Market street,           | Wilkes-Barre.            |
| Grotevent, J. Fred'k.  | 825 N. Sixth street,            | Harrisburg.              |
| Grover, Mary L.,       | Luzerne,                        | Luzerne county.          |
| Grubb, George H.,      | 1427 E. Susquehanna street,     | Philadelphia.            |
| Gruhler, Christian,    | Shenandoah,                     | Schuylkill county.       |
| Grumer, Robert,        | 26 S. Seventh street,           | Easton.                  |
| Grunder, Harry R.,     | Fourth street and River avenue, | Parker's Landing.        |
| Guest, Harry,          | Eighth and Race streets,        | Philadelphia.            |
| Guth, Harry L.,        | Etna,                           | Allegheny county.        |
| Haas, Joseph A.,       | 147 South Eighteenth street,    | Pittsburgh.              |
| Haas, William A.,      | Easton,                         | Northampton county.      |
| Hacberle, Louis P.,    | 919 N. Twenty-sixth street,     | Philadelphia.            |
| Hackenberger, Ira N.,  | Bainbridge,                     | Lancaster county.        |
| Hackney, George W.,    | 1106 Chestnut street,           | Philadelphia.            |
| Hadley, Harry C.,      | Kennett Square,                 | Chester county.          |
| Hahn, Herman F.,       | 915 N. Third street,            | Harrisburg.              |
| Haines, J. A.,         | Brookville,                     | Jefferson county.        |
| Haines, Joseph R.,     | Lumberton,                      | Burlington county, N. J. |
| Haines, Oliver B. J.,  | 326 E. Girard avenue,           | Philadelphia.            |
| Haines, Robert M.,     | 6 Pittsburgh street,            | New Castle.              |
| Hall, Annie M.,        | Avenue,                         | Allegheny county.        |
| Hall, Charles A.,      | 326 Erie avenue,                | Renovo.                  |
| Hall, Charles B.,      | 630 State street,               | Erie.                    |
| Hall, Edward P.,       | 630 State street,               | Erie.                    |
| Hall, Marlborough,     | 668 N. Fifteenth street,        | Philadelphia.            |
| Hall, Samuel J.,       | Dallas,                         | Luzerne county.          |
| Hall, Thomas M.,       | 941 Spruce street,              | Philadelphia.            |
| Hallowell, Bruce C.,   | Frankford,                      | Philadelphia.            |
| Hamaker, Samuel S.,    | 124 Market street,              | Harrisburg.              |
| Hamilton, Harry,       | Reynoldsville,                  | Jefferson county.        |
| Hammerquist, Chas. E., | 3741 Lancaster avenue,          | Philadelphia.            |
| Hanby, Margaret C.,    | Manayunk,                       | Philadelphia.            |
| Handler, William,      | 4434 Lancaster avenue,          | Philadelphia.            |
| Hanna, Frank H.,       | Springdale,                     | Allegheny county.        |
| Hanson, Arthur E.,     | 2131 De Lancy Place,            | Philadelphia.            |
| Harbach, Edward J.,    | 138 Poplar street,              | Reading.                 |
| Harbold, Curtis A.,    | Shrewsbury,                     | York county.             |
| Harders, M. Thompson,  | 1941 Ridge avenue,              | Philadelphia.            |
| Harm, William J.,      | Columbia,                       | Lancaster county.        |
| Harner, Russell S.,    | Danville,                       | Montour county.          |
| Harrington, Dewitt C., | Wellsboro',                     | Tioga county.            |
| Harris, James A.,      | Hamburg,                        | Berks county.            |
| Harris, William P.,    | Mill Hall,                      | Clinton county.          |
| Harrold, William H.,   | 805 Fifth street,               | Philadelphia.            |
| Hart, Thomas F.,       | 366 Hazle street,               | Wilkes-Barre.            |
| Harter, Walter E.,     | Nanticoke,                      | Luzerne county.          |
| Hartman, Frank G.,     | 430 N. Lime street,             | Lancaster.               |
| Hartman, William H.,   | 13 S. Second street,            | Philadelphia.            |
| Hartwell, Samuel,      | Coudersport,                    | Potter county.           |
| Hasson, Harry D.,      | 151 N. Tenth street,            | Philadelphia.            |
| Hastings, Alice E.,    | Austin,                         | Potter county.           |
| Hauck, Clarence A.,    | Sunbury,                        | Northumberland county.   |
| Haupt, William G.,     | Hartleton,                      | Union county.            |
| Hay, Charles G.,       | 2908 Carson street,             | Pittsburgh, South Side.  |
| Haydock, Susannah G.,  | 1941 Ridge avenue,              | Philadelphia.            |



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| Hazen, S. W., . . . . .           | Sharpsville, . . . . .                     | Mercer county.       |
| Head, Ray C., . . . . .           | 1260 N. Tenth street, . . . . .            | Philadelphia.        |
| Hecker, Virginia, . . . . .       | 1414 N. Second street, . . . . .           | Philadelphia.        |
| Heckler, Frank J., Jr., . . . . . | Columbia, . . . . .                        | Lancaster county.    |
| Heesom, Charles R. H., . . . . .  | 2631 Carson street, . . . . .              | Pittsburgh.          |
| Heiges, Wm. Smith, . . . . .      | 110 E. Market street, . . . . .            | York.                |
| Heilman, Isaac K., . . . . .      | Clarion, . . . . .                         | Clarion county.      |
| Heim, William J., . . . . .       | 1725 N. Eleventh street, . . . . .         | Philadelphia.        |
| Henderson, Byron E., . . . . .    | Sharpsburg, . . . . .                      | Allegheny county.    |
| Hendrickson, Chas. P., . . . . .  | 541 Thompson street, . . . . .             | Philadelphia.        |
| Henkel, Luther S., . . . . .      | 214 W. Fourth street, . . . . .            | Williamsport.        |
| Henritzy, Oscar E., . . . . .     | 2167 E. Cumberland street, . . . . .       | Philadelphia.        |
| Henry, Samuel C., . . . . .       | Jenkintown, . . . . .                      | Montgomery county.   |
| Henry, William F., . . . . .      | 1216 Mt. Vernon street, . . . . .          | Philadelphia.        |
| Hepler, John L., . . . . .        | 108 S. Fourth street, . . . . .            | Reading.             |
| Herber, Conrad, . . . . .         | Ninth and Filbert streets, . . . . .       | Philadelphia.        |
| Hering, Edwin A., . . . . .       | 906 Seventh avenue, . . . . .              | Altoona.             |
| Hermany, Horace, . . . . .        | Delano, . . . . .                          | Schuylkill county.   |
| Herold, George W., . . . . .      | 133 Fifth avenue, . . . . .                | McKeesport.          |
| Herr, Harry M., . . . . .         | E. King and Middle streets, . . . . .      | Lancaster.           |
| Hertel, Julius E., . . . . .      | Third and Brown streets, . . . . .         | Philadelphia.        |
| Hess, Earle L., . . . . .         | 634 Michigan street, . . . . .             | Buffalo, N. Y.       |
| Hess, Harry R., . . . . .         | Montgomery Station, . . . . .              | Lycoming county.     |
| Heverley, James T., . . . . .     | Howard, . . . . .                          | Centre county.       |
| Hickock, George R., . . . . .     | Troy, . . . . .                            | Bradford county.     |
| Hildebrand, Harry C., . . . . .   | Worth, . . . . .                           | Mercer county.       |
| Hildebrand, Joseph S., . . . . .  | Worth, . . . . .                           | Mercer county.       |
| Hildebrand, Wm. M., . . . . .     | West Indiana, . . . . .                    | Indiana county.      |
| Hileman, George F., . . . . .     | Dushore, . . . . .                         | Sullivan county.     |
| Hill, George S., . . . . .        | Towanda, . . . . .                         | Bradford county.     |
| Hill, William, . . . . .          | 2054 E. Huntingdon street, . . . . .       | Philadelphia.        |
| Hilfert, William, . . . . .       | 313 W. York street, . . . . .              | Philadelphia.        |
| Hilton, Bertha, . . . . .         | Pleasantville, . . . . .                   | Venango county.      |
| Hirth, Walter J., . . . . .       | Homestead, . . . . .                       | Allegheny county.    |
| Hodgson, Arthur R., . . . . .     | Rochester, . . . . .                       | Beaver county.       |
| Hoey, Robert W. M., . . . . .     | Brockwayville, . . . . .                   | Jefferson county.    |
| Hoffman, Ella S., . . . . .       | Ninth and Liberty streets, . . . . .       | Allentown.           |
| Hoffman, Oscar P., . . . . .      | 437 Northampton street, . . . . .          | Easton.              |
| Hohman, Albert T., . . . . .      | 1638 Diamond street, . . . . .             | Philadelphia.        |
| Holcomb, Edwin S., . . . . .      | Westfield, . . . . .                       | Tioga county.        |
| Hollopeter, Martha E., . . . . .  | Shickshinny, . . . . .                     | Luzerne county.      |
| Holmes, William D., . . . . .     | Corry, . . . . .                           | Erie county.         |
| Homer, Charles M., . . . . .      | 125 S. Thirty-seventh street, . . . . .    | Philadelphia.        |
| Hook, Frederick, . . . . .        | 82 Laurel avenue, . . . . .                | Allegheny.           |
| Horning, John, . . . . .          | Nineteenth and Oxford streets, . . . . .   | Philadelphia.        |
| Hosley, George W., . . . . .      | 307 N. Ninth street, . . . . .             | Reading.             |
| Houch, John W., . . . . .         | 6322 Woodland avenue, . . . . .            | Philadelphia.        |
| Howell, E. S., . . . . .          | Seventeenth and Dauphin streets, . . . . . | Philadelphia.        |
| Howells, John J., . . . . .       | 6 W. Market street, . . . . .              | Wilkes-Barre.        |
| Huber, Charles F., . . . . .      | Greensburg, . . . . .                      | Westmoreland county. |
| Hubley, Anna M., . . . . .        | 36 W. King street, . . . . .               | Lancaster.           |
| Hughes, Frank S., . . . . .       | 827 Spring Garden street, . . . . .        | Norristown.          |
| Hughes, Lindsey B., . . . . .     | Punxsutawney, . . . . .                    | Jefferson county.    |
| Hunter, David C., . . . . .       | 1111 Walnut street, . . . . .              | McKeesport.          |
| Hurlburt, Charles W., . . . . .   | Gaines, . . . . .                          | Tioga county.        |
| Hursh, John S., . . . . .         | Newville, . . . . .                        | Cumberland county.   |
| Hyland, Charles H., . . . . .     | Hyndman, . . . . .                         | Bedford county.      |

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| Infield, James C., . . .    | Beaver Falls, . . . . .                | Beaver county.       |
| Infield, Mary A., . . .     | West Middlesex, . . . . .              | Mercer county.       |
| Irvin, Robert S., . . .     | Newton, . . . . .                      | Bucks county.        |
| Irvin, Thomas, Jr., . . .   | Centralia, . . . . .                   | Columbia county.     |
| Irvine, John, Jr., . . .    | 1 E. Main street, . . . . .            | Carlisle.            |
| Irvine, Reed, . . .         | Bedford, . . . . .                     | Bedford county.      |
| Irwin, George R., . . .     | 23 N. Second street, . . . . .         | Clearfield county.   |
| Irwin, Harry C., . . .      | 284 Locust street, . . . . .           | Pittsburgh.          |
| Jackson, S. Howard, Jr.,    | Wilksburg, . . . . .                   | Allegheny county.    |
| Jacob, Charles P., . . .    | 707 Vine street, . . . . .             | Philadelphia.        |
| Jacob, Walter W., . . .     | 146 N. Twentieth street, . . . . .     | Philadelphia.        |
| James, Benjamin T., . . .   | Plymouth, . . . . .                    | Luzerne county.      |
| James, George R., . . .     | Orbisonia, . . . . .                   | Huntingdon county.   |
| Jamison, Samuel C., . . .   | 2329 Penn avenue, . . . . .            | Pittsburgh.          |
| Janson, Edwin L., . . .     | 1224 Vine street, . . . . .            | Philadelphia.        |
| Jenckes, Sydney J., . . .   | Montrose, . . . . .                    | Susquehanna county.  |
| Jenkins, David J., . . .    | 1234 Academy street, . . . . .         | Scranton.            |
| Jenkins, Thomas W., . . .   | 1234 Academy street, . . . . .         | Scranton.            |
| Jenkins, William A., . . .  | Nanticoke, . . . . .                   | Luzerne county.      |
| Johnson, Frank R., . . .    | 1300 W. Third street, . . . . .        | Chester.             |
| Johnson, William D., . . .  | 24 Main street, . . . . .              | Towanda.             |
| Jones, Edward E., . . .     | Harford, . . . . .                     | Susquehanna county.  |
| Jones, George S., . . .     | 508 Wyoming avenue, . . . . .          | Scranton.            |
| Jones, John R., . . .       | 387 N. Main street, . . . . .          | Wilkes-Barre.        |
| Jones, William W., . . .    | 212 Pine street, . . . . .             | Williamsport.        |
| Jordy, Louis, . . .         | 103 E. Princess street, . . . . .      | York.                |
| Jump, Henry D., . . .       | Sixth and Reed streets, . . . . .      | Philadelphia.        |
| Kachline, Fred'k W., . . .  | Easton, . . . . .                      | Northampton county.  |
| Kahl, Charles W., . . .     | 236 Fifth avenue, . . . . .            | McKeesport.          |
| Kaiser, John R., . . .      | Wilkes-Barre, . . . . .                | Luzerne county.      |
| Kalkman, Henry A., . . .    | Honesdale, . . . . .                   | Wayne county.        |
| Karcher, James D., . . .    | 632 N. Eighteenth street, . . . . .    | Philadelphia.        |
| Kasten, William H., . . .   | East Mauch Chunk, . . . . .            | Carbon county.       |
| Kaze, Mary A., . . .        | 2638 Brown street, . . . . .           | Philadelphia.        |
| Kearns, William D., . . .   | 161 Fifth avenue, . . . . .            | Pittsburgh.          |
| Keefer, Elmer A., . . .     | 313 N. Second street, . . . . .        | Harrisburg.          |
| Keet, Henry I., . . .       | 202 N. Second street, . . . . .        | Harrisburg.          |
| Keiper, Harvey L., . . .    | Thirteenth and Wood streets, . . . . . | Philadelphia.        |
| Keller, Augustus H., . . .  | 107 Race street, . . . . .             | Philadelphia.        |
| Keller, Benjamin C., . . .  | 123 N. Tenth street, . . . . .         | Philadelphia.        |
| Keller, Robert J., . . .    | 337 Cattrell street, . . . . .         | Easton.              |
| Kelly, Clara E., . . .      | Pleasant Unity, . . . . .              | Westmoreland county. |
| Kelly, G. Frank, . . .      | Scottdale, . . . . .                   | Westmoreland county. |
| Kelly, Harry M., . . .      | Beaver Falls, . . . . .                | Beaver county.       |
| Kelly, James H., . . .      | Pleasant Unity, . . . . .              | Westmoreland county. |
| Kelly, James L., . . .      | South Chester, . . . . .               | Delaware county.     |
| Kelly, Joseph H., . . .     | Main and Salem streets, . . . . .      | Carbondale.          |
| Kelly, Russell E., . . .    | Lewisburg, . . . . .                   | Columbia county.     |
| Kelsch, Frank J., . . .     | 129 E. Eighteenth street, . . . . .    | Erie.                |
| Kenah, Charles J., . . .    | New Brighton, . . . . .                | Beaver county.       |
| Kendall, Benjamin F., . . . | Conneautville, . . . . .               | Crawford county.     |
| Kenney, Joseph W., . . .    | Braddock, . . . . .                    | Allegheny county.    |
| Kephart, T. A. C., . . .    | 1325 Seventh avenue, . . . . .         | Altoona.             |
| Kepler, George B. M., . . . | Port Royal, . . . . .                  | Juniata county.      |
| Kern, Franklin, . . .       | Slatington, . . . . .                  | Lehigh county.       |

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| Kessler, Francis E., . . .    | 1401 Fairmount avenue, . . . . .         | Philadelphia.          |
| Keyes, James E., . . .        | 530 Green street, . . . . .              | Philadelphia.          |
| Kier, Harry M., . . .         | 161 Fifth avenue, . . . . .              | Pittsburgh.            |
| Kilgore, Edgar B., . . .      | Franklin, . . . . .                      | Venango county.        |
| Kilgus, John F., . . .        | Renovo, . . . . .                        | Clinton county.        |
| Kilgus, William F., . . .     | Renovo, . . . . .                        | Clinton county.        |
| Kinsel, Grant A., . . .       | Lewistown, . . . . .                     | Mifflin county.        |
| Kiskadden, Everett E., . . .  | Etna, . . . . .                          | Allegheny county.      |
| Kitchen, Charles E., . . .    | Piqua, . . . . .                         | Miami county, Ohio.    |
| Klein, George P., . . .       | 701 Lehman street, . . . . .             | Lebanon.               |
| Klenk, Horace D., . . .       | Minersville, . . . . .                   | Schuylkill county.     |
| Kline, Alvin B., . . .        | 64 Heigh street, . . . . .               | Bellefonte.            |
| Kline, Harry J., . . .        | 2152 N. Front street, . . . . .          | Philadelphia.          |
| Klinefelter, Charles, . . .   | Factoryville, . . . . .                  | Wyoming county.        |
| Klopp, Henry L., . . .        | 1444 N. Nineteenth street, . . . . .     | Philadelphia.          |
| Knapp, Hanford, . . .         | Equinunk, . . . . .                      | Wayne county.          |
| Knapp, Philip P., . . .       | 315 Smithfield street, . . . . .         | Pittsburgh.            |
| Knowles, George A., . . .     | 1124 S. Twenty-second street, . . . . .  | Philadelphia.          |
| Koch, Bertha, . . . .         | 62 Washington avenue, . . . . .          | Pittsburgh.            |
| Koch, Louis H., . . .         | 627 Wood street, . . . . .               | Philadelphia.          |
| Kocher, David C., . . .       | 709 Hamilton street, . . . . .           | Allentown.             |
| Koenig, Albert H., . . .      | 722 N. Third street, . . . . .           | Philadelphia.          |
| Kogelschatz, J. Wm., . . .    | 121 Marshall street, . . . . .           | Norristown.            |
| Kolb, Charles A., . . .       | 46 Western avenue, . . . . .             | Allegheny.             |
| Koons, Milton H., . . .       | Catasauqua, . . . . .                    | Lehigh county.         |
| Koser, Samuel B., . . .       | Neffsville, . . . . .                    | Lancaster county.      |
| Kottka, Ray W., . . .         | 1202 N. Fifth street, . . . . .          | Philadelphia.          |
| Krall, John T., . . .         | 1106 Chestnut street, . . . . .          | Philadelphia.          |
| Krauser, James S., . . .      | Milton, . . . . .                        | Northumberland county. |
| Krauss, Frederick, . . .      | 1712 N. Third street, . . . . .          | Philadelphia.          |
| Krey, Louis, . . . .          | 282 Ohio street, . . . . .               | Allegheny.             |
| Krollpfeifer, Fred. W., . . . | 2209 Reese street, . . . . .             | Philadelphia.          |
| Krusen, Wilmer, . . .         | Newton, . . . . .                        | Bucks county.          |
| Kuhn, John M., . . .          | Mercersburg, . . . . .                   | Franklin county.       |
| Kuhn, Paul, . . . .           | 1300 Penn avenue, . . . . .              | Pittsburgh.            |
| Kulp, William A., . . .       | 324 E. Main street, . . . . .            | Lock Haven.            |
| Kump, Wm. A., Jr., . . .      | Hanover, . . . . .                       | York county.           |
| Kunkle, Wesley F., . . .      | Salladasburg, . . . . .                  | Lycoming county.       |
| Kunkle, William H., . . .     | 1844 Franklin street, . . . . .          | Philadelphia.          |
| Kutscher, George, . . .       | 915 Main street, . . . . .               | Braddock.              |
| Lack, Charles E., . . .       | Bethlehem, . . . . .                     | Northampton county.    |
| La Dow, Addington, . . .      | 1500 S. Thirteenth street, . . . . .     | Philadelphia.          |
| Laffer, Cornelius C., . . .   | Meadville, . . . . .                     | Crawford county.       |
| Lamb, Charles F., . . .       | Milton, . . . . .                        | Northumberland county. |
| Lambert, George T., . . .     | . . . . .                                | Philadelphia.          |
| Lammer, Henry B., . . .       | 633 Pine street, . . . . .               | Philadelphia.          |
| Lammer, Jacob S., . . .       | 1704 Dauphin street, . . . . .           | Philadelphia.          |
| Landis, Charles P., . . .     | Eighteenth and McKean streets, . . . . . | Philadelphia.          |
| Lane, Samuel H., . . .        | 13 N. Church street, . . . . .           | West Chester.          |
| Lang, Wood H., . . .          | Belle Vernon, . . . . .                  | Fayette county.        |
| Larkins, Charles T., . . .    | 1345 Vine street, . . . . .              | Philadelphia.          |
| Lawall, Charles H., . . .     | Bloomsburg, . . . . .                    | Columbia county.       |
| Lawrence, William E., . . .   | Beaver, . . . . .                        | Beaver county.         |
| Leathers, James W., . . .     | New Castle, . . . . .                    | Lawrence county.       |
| Lefferts, Henry T., . . .     | Southampton, . . . . .                   | Bucks county.          |
| Leidick, Percy G., . . .      | Thirteenth and Race streets, . . . . .   | Philadelphia.          |

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| Leinbach, Frank I., . . .     | Lewisburg, . . . . .                | Union county.      |
| Leix, Louis, . . . . .        | 1329 Third avenue, . . . . .        | Altoona.           |
| Leshner, William R., . . .    | 417 Laurel street, . . . . .        | Reading.           |
| Leslie, Henry A., . . . .     | 230 N. Twenty-second street, . . .  | Philadelphia.      |
| Levergood, John, . . . .      | Wrightsville, . . . . .             | York county.       |
| Levis, Catharine A., . . .    | West Bridgewater, . . . . .         | Beaver county.     |
| Lewis, Arthur W., . . . .     | East Berlin, . . . . .              | Adams county.      |
| Lewis, Charles A., . . . .    | Elizabeth, . . . . .                | Allegheny county.  |
| Lewis, Griffith R., . . . .   | Catasauqua, . . . . .               | Lehigh county.     |
| Lewis, William H., . . . .    | Belle Vernon, . . . . .             | Fayette county.    |
| Limpert, John B., . . . .     | 4114 Penn avenue, . . . . .         | Pittsburgh.        |
| Lindeman, Charles E., . . .   | 676 Fifth avenue, . . . . .         | Pittsburgh.        |
| Lindeman, Frank M., . . .     | Kittanning, . . . . .               | Armstrong county.  |
| Lindsay, John J., . . . .     | Verona, . . . . .                   | Allegheny county.  |
| Lindsey, John R., . . . .     | Mercer, . . . . .                   | Mercer county.     |
| Lindsey, Thomas S., . . . .   | Mercer, . . . . .                   | Mercer county.     |
| Lingle, Milton D., . . . .    | West Hanover, . . . . .             | Dauphin county.    |
| Lippen, Jonathan K., . . .    | 4665 Washington street, . . . . .   | Manayunk.          |
| Lippincott, A. H., Jr., . . . | 117 E. Cumberland street, . . . .   | Philadelphia.      |
| Lippincott, Norman D., . . .  | New Hope, . . . . .                 | Bucks county.      |
| Livezey, Richard W., . . . .  | Doylestown, . . . . .               | Bucks county.      |
| Lloyd, James E., . . . .      | Queen and Front streets, . . . . .  | Northumberland.    |
| Loeb, Louis, . . . . .        | Doylestown, . . . . .               | Bucks county.      |
| Loelkes, Alex. G., . . . .    | Third and Callowhill streets, . . . | Philadelphia.      |
| Loesch, William, Jr., . . .   | 909 N. Eighth street, . . . . .     | Philadelphia.      |
| Loftus, John J., . . . .      | 237 Wyoming avenue, . . . . .       | Scranton.          |
| Logan, Casper T., . . . .     | Millerstown, . . . . .              | Butler county.     |
| Lohmeyer, Henry L., . . . .   | 2002 Sarah avenue, . . . . .        | Pittsburgh.        |
| Long, Charles B., . . . .     | Connellsville, . . . . .            | Fayette county.    |
| Long, Christian L., . . . .   | Shippensburg, . . . . .             | Cumberland county. |
| Long, Harvey, . . . . .       | Middletown, . . . . .               | Dauphin county.    |
| Long, James F., . . . .       | 627 Copeland street, . . . . .      | Pittsburgh.        |
| Long, Leon H., . . . .        | 1627 South street, . . . . .        | Philadelphia.      |
| Longnaker, Frank I., . . .    | 528 Fifth avenue, . . . . .         | Pittsburgh.        |
| Loomis, George B., . . . .    | North East, . . . . .               | Erie county.       |
| Lorah, James R., . . . .      | Reading, . . . . .                  | Berks county.      |
| Lorah, Lester I., . . . .     | Emlenton, . . . . .                 | Venango county.    |
| Lorch, Carl P., . . . .       | 139 Seventeenth street, . . . . .   | Pittsburgh.        |
| Lord, Annie, . . . . .        | Norristown, . . . . .               | Montgomery county. |
| Lord, Leon S., . . . .        | 1914 Fairmount avenue, . . . . .    | Philadelphia.      |
| Louther, Snyder J., . . . .   | Somerset, . . . . .                 | Somerset county.   |
| Loveland, Prescott R., . . .  | 5033 Germantown avenue, . . . . .   | Philadelphia.      |
| Lowry, Sydney A., . . . .     | 249 N. Eleventh street, . . . . .   | Philadelphia.      |
| Luchsinger, Samuel C., . . .  | 254 N. Eleventh street, . . . . .   | Philadelphia.      |
| Lufus, Harman E., . . . .     | 1201 Ellsworth street, . . . . .    | Philadelphia.      |
| Lumb, Charles T., . . . .     | Frankford, . . . . .                | Philadelphia.      |
| Lusk, Harry J., . . . .       | New Castle, . . . . .               | Lawrence county.   |
| Lutz, Henry E., . . . .       | 225 Penn avenue, . . . . .          | Scranton.          |
| Lutz, Henry O., . . . .       | 11 Martin street, . . . . .         | Titusville.        |
| Lutz, Irwin B., . . . .       | 353 S. Sixth street, . . . . .      | Reading.           |
| Lutz, William D., . . . .     | 4766 Willow avenue, . . . . .       | Germantown.        |
| Lynn, Charles J., . . . .     | Quakertown, . . . . .               | Bucks county.      |
| Lyons, Frank F., . . . .      | 627 Wood street, . . . . .          | Philadelphia.      |
| Lytle, Louis E., . . . .      | New Haven, . . . . .                | Fayette county.    |
| Lytle, Ross, . . . .          | Confluence, . . . . .               | Somerset county.   |



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|---------------------------|-------------------------------------|------------------------|
| Mackey, Edward S., . . .  | 145 N. Tenth street, . . . . .      | Philadelphia.          |
| MacLennan, F. W., . . .   | 2022 Woodstock street, . . . . .    | Philadelphia.          |
| Macouch, Emlen, . . .     | Malvern, . . . . .                  | Chester county.        |
| Madeira, Robert W., . .   | Shoemakersville, . . . . .          | Berks county.          |
| Magowan, Belle C., . .    | Kane, . . . . .                     | McKean county.         |
| Main, Clinton E., . . .   | 2407 Fairmount avenue, . . . . .    | Philadelphia.          |
| Mangold, Emil E., . . .   | 64 Lowry street, . . . . .          | Allegheny.             |
| Mangold, Oscar G., . .    | 64 Lowry street, . . . . .          | Allegheny.             |
| Manning, Charles L., . .  | 1600 Chestnut street, . . . . .     | Philadelphia.          |
| Marcy, Cyrus E., . . .    | Carbondale, . . . . .               | Lackawanna county.     |
| Markell, Charles E., . .  | 207 Main street, . . . . .          | Monongahela City.      |
| Markley, William A., . .  | 154 N. Sixth street, . . . . .      | Reading.               |
| Martin, Charles E., . . . | 177 Second avenue, . . . . .        | Pittsburgh.            |
| Martin, Lavinia B., . . . | 60 E. Market street, . . . . .      | Lewistown.             |
| Martz, George E., . . .   | 312 North street, . . . . .         | Harrisburg.            |
| Martz, William K., . . .  | Sunbury, . . . . .                  | Northumberland county. |
| Marvill, Joseph H., . . . | 32 N. Ninth street, . . . . .       | Philadelphia.          |
| Massinger, Charles J., .  | Chalfont, . . . . .                 | Bucks county.          |
| Mattern, E. P., . . . .   | 62 Thirteenth street, . . . . .     | Franklin.              |
| Matthews, E. M., . . .    | 1128 Girard avenue, . . . . .       | Philadelphia.          |
| Mauger, Henry S., . . .   | Nineteenth and Jefferson streets, . | Philadelphia.          |
| Mayer, Mrs. Wm. C., . .   | 231 Richmond street, . . . . .      | Philadelphia.          |
| Mayes, Thomas E., . . .   | 28 E. Market street, . . . . .      | Lewistown.             |
| Mays, Wilfred J., . . .   | 3 S. Main street, . . . . .         | Pittston.              |
| Mazers, Joseph A., . . .  | Kane, . . . . .                     | McKean county.         |
| McAniff, Hugh P., . . .   | 108 Public square, . . . . .        | Wilkes-Barre.          |
| McAvoy, Edward J., . . .  | St. Mary's, . . . . .               | Elk county.            |
| McBride, Joseph E., . .   | 301 E. Third street, . . . . .      | South Bethlehem.       |
| McCandless, Edward S., .  | 326 S. Nineteenth street, . . . . . | Philadelphia.          |
| McCarthy, James, . . .    | Oil City, . . . . .                 | Venango county.        |
| McCartney, Frank S., . .  | Coalport, . . . . .                 | Clearfield county.     |
| McCaw, Charles F., . . .  | New Brighton, . . . . .             | Beaver county.         |
| McClintock, James, . . .  | 5102 Germantown avenue, . . . . .   | Germantown.            |
| McCloud, Myron, . . . .   | Darlington, . . . . .               | Beaver county.         |
| McClure, John, . . . .    | 18 Master street, . . . . .         | Philadelphia.          |
| McClure, Linwood D., . .  | 2122 Uber street, . . . . .         | Philadelphia.          |
| McClure, Robert G., . . . | Braddock, . . . . .                 | Allegheny county.      |
| McConnell, John P., . . . | Fifth avenue and Vine street, . .   | Pittsburgh.            |
| McConnell, J. William, .  | Canonsburg, . . . . .               | Washington county.     |
| McCoy, Frederick A., . .  | Smethport, . . . . .                | McKean county.         |
| McCreary, Alice R., . . . | Homewood ave. and Glazier st., .    | Pittsburgh.            |
| McCreary, Fred'k N., . .  | Fairview, . . . . .                 | Erie county.           |
| McCulloch, Edgar W., . .  | 6 Elm street, . . . . .             | Oil City.              |
| McDonald, Fred'k T., . .  | Avondale, . . . . .                 | Chester county.        |
| McDonald, James W., . .   | Dunmore, . . . . .                  | Lackawanna county.     |
| McDonough, James R., . .  | Dunmore, . . . . .                  | Lackawanna county.     |
| McDonough, Oscar T., . .  | California, . . . . .               | Washington county.     |
| McFarland, Robert, . . .  | 2648 E. Thomas street, . . . . .    | Philadelphia.          |
| McFarland, Robert L., . . | Sharon, . . . . .                   | Mercer county.         |
| McGrath, Joseph S., . . . | 29 Gibbon street, . . . . .         | Pittsburgh.            |
| McIntosh, John R., . . .  | 632 N. Eighteenth street, . . . . . | Philadelphia.          |
| McKee, Alexander O., . .  | Etna, . . . . .                     | Allegheny county.      |
| McKnight, Jay B., . . .   | Brookville, . . . . .               | Jefferson county.      |
| McKnight, Jos. W. I., . . | Bristol, . . . . .                  | Bucks county.          |
| McLaughlin, Philip C., .  | York, . . . . .                     | York county.           |
| McLure, B. G., . . . .    | Prospect, . . . . .                 | Butler county.         |
| McMahan, Robert A., . .   | Troy, . . . . .                     | Bradford county.       |

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| McManus, Joseph, . . .        | 3831 Fairmount avenue, . . . . .            | Philadelphia.          |
| McMeehan, Chas. J. H., . . .  | 2211 N. Fourth street, . . . . .            | Philadelphia.          |
| McMillan, William C., . . .   | 1028 Race street, . . . . .                 | Philadelphia.          |
| McMurray, Charles F., . . .   | Washington, . . . . .                       | Washington county.     |
| McMurtrie, David, Jr., . . .  | 1106 Eleventh street, . . . . .             | Altoona.               |
| McNabb, Henry S., . . .       | 1400 Spruce street, . . . . .               | Philadelphia.          |
| McNamara, John A., . . .      | Towanda, . . . . .                          | Bradford county.       |
| McNeil, Robert C., . . .      | Howard and York streets, . . . . .          | Philadelphia.          |
| McVay, James P., . . .        | Eighth and Diamond streets, . . . . .       | Philadelphia.          |
| Meek, Charles F., . . .       | Muncy, . . . . .                            | Lycoming county.       |
| Medara, Thomas J., . . .      | 256 Richmond street, . . . . .              | Philadelphia.          |
| Meehan, Peter, . . .          | Williamstown, . . . . .                     | Dauphin county.        |
| Meek, Frank J., . . .         | Fourth and Oak streets, . . . . .           | Mt. Carmel.            |
| Melick, Ralph L., . . .       | Sunbury, . . . . .                          | Northumberland county. |
| Mellinger, Harvey E., . . .   | Mount Pleasant, . . . . .                   | Westmoreland county.   |
| Melvin, Edward J., . . .      | 237 Wyoming avenue, . . . . .               | Scranton.              |
| Melvin, Ernest H., . . .      | New Brighton, . . . . .                     | Beaver county.         |
| Mendenhall, Harry C., . . .   | Bloomsburg, . . . . .                       | Columbia county.       |
| Mengel, Levi W., . . .        | 530 N. Seventh street, . . . . .            | Philadelphia.          |
| Mentzer, Harlan J., . . .     | 3952 Lancaster avenue, . . . . .            | Philadelphia.          |
| Meredith, Charles C., . . .   | 173 Third avenue, . . . . .                 | Pittsburgh.            |
| Meredith, John T., . . .      | Tyrone, . . . . .                           | Blair county.          |
| Merkle, William M., . . .     | Eighth and Cumberland streets, . . . . .    | Philadelphia.          |
| Merony, John P., . . .        | Thirteenth and Green streets, . . . . .     | Philadelphia.          |
| Merrifield, Robert, . . .     | 214 N. Main avenue, . . . . .               | Scranton.              |
| Messenger, Jos. D. K., . . .  | Ridgway, . . . . .                          | Elk county.            |
| Metzger, Charles W., . . .    | 3741 Lancaster avenue, . . . . .            | Philadelphia.          |
| Metzger, William A., . . .    | Dillsburg, . . . . .                        | York county.           |
| Metzger, William W., . . .    | Honesdale, . . . . .                        | Wayne county.          |
| Meyers, Louis J., . . .       | Conshohocken, . . . . .                     | Montgomery county.     |
| Mierzwa, Richard E. R., . . . | 624 Smithfield street, . . . . .            | Pittsburgh.            |
| Mikoski, Leon, . . .          | Nanticoke, . . . . .                        | Luzerne county.        |
| Miller, Charles B., . . .     | 1412 Walnut street, . . . . .               | Philadelphia.          |
| Miller, Frank, . . .          | 717 N. Eleventh street, . . . . .           | Philadelphia.          |
| Miller, Franklin J., . . .    | 448 Wyandotte street, . . . . .             | South Bethlehem.       |
| Miller, Frederick G., . . .   | Hazleton, . . . . .                         | Luzerne county.        |
| Miller, Geo. B. M. C., . . .  | Front and Market streets, . . . . .         | Allentown.             |
| Miller, George P., . . .      | 1501 Christian street, . . . . .            | Philadelphia.          |
| Miller, Jefferson L., . . .   | Orwigsburg, . . . . .                       | Clearfield county.     |
| Miller, John H., . . .        | 2445 Ridge avenue, . . . . .                | Philadelphia.          |
| Miller, Lynford C., . . .     | Tunkhannock, . . . . .                      | Wyoming county.        |
| Miller, Mary F., . . .        | Houtzdale, . . . . .                        | Clearfield county.     |
| Miller, Roshier, . . .        | Eleventh and Oxford streets, . . . . .      | Philadelphia.          |
| Miller, Samuel A., . . .      | 38th street and Lancaster avenue, . . . . . | Philadelphia.          |
| Miller, Solomon M., . . .     | 23d street and Fairmount avenue, . . . . .  | Philadelphia.          |
| Miller, William H., . . .     | 527 Reed street, . . . . .                  | Philadelphia.          |
| Milliken, William H., . . .   | 516 S. Seventeenth street, . . . . .        | Philadelphia.          |
| Minner, Louis A., . . .       | 541 E. Thompson street, . . . . .           | Philadelphia.          |
| Missimer, Harry D., . . .     | 142 S. Ninth street, . . . . .              | Reading.               |
| Mitchell, Henry, . . .        | 501 S. Twenty-fourth street, . . . . .      | Philadelphia.          |
| Mitchell, William H., . . .   | Driftwood, . . . . .                        | Cameron county.        |
| Monaghan, William J., . . .   | Girardville, . . . . .                      | Schuylkill county.     |
| Monie, Thomas, . . .          | Archbald, . . . . .                         | Lackawanna county.     |
| Moore, Eugene F., . . .       | 43 W Sunbury street, . . . . .              | Shamokin.              |
| Moore, James J., . . .        | Dillsburg, . . . . .                        | York county.           |
| Moore, Leopold P., . . .      | Tidioute, . . . . .                         | Warren county.         |
| Morgan, George I., . . .      | 1412 Walnut street, . . . . .               | Philadelphia.          |

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| Morgan, Sarah L., . . .             | Williamstown, . . . . .                  | Dauphin county.      |
| Morrison, John W., . . .            | 1207 Race street, . . . . .              | Philadelphia.        |
| Morrow, George S., . . .            | Derry Station, . . . . .                 | Westmoreland county. |
| Moss, Benjamin F., . . .            | 1901 N. Eleventh street, . . . . .       | Philadelphia.        |
| Moylam, William H., . . .           | 1300 S. Fifth street, . . . . .          | Philadelphia.        |
| Mueller, Charles A., . . .          | 621 N. Third street, . . . . .           | Philadelphia.        |
| Muir, John R., . . . . .            | 550 N. Tenth street, . . . . .           | Philadelphia.        |
| Mulheron, John D., . . .            | 1200 Callowhill street, . . . . .        | Philadelphia.        |
| Mundorff, Harry K., . . .           | York, . . . . .                          | York county.         |
| Murphy, Frank G., . . .             | 2724 Gray's Ferry road, . . . . .        | Philadelphia.        |
| Murphy, Thomas W., . . .            | East Brady, . . . . .                    | Clarion county.      |
| Murphy, William C., . . .           | Mount Pleasant, . . . . .                | Westmoreland county. |
| Murray, George W., . . .            | Mehaffey, . . . . .                      | Clearfield county.   |
| Musgrave, Aaron W., . . .           | Bloomsburg, . . . . .                    | Columbia county.     |
| Myers, Arnold A., . . .             | 1700 Mt. Vernon street, . . . . .        | Philadelphia.        |
| Myers, Frank, . . . . .             | 1900 Judson Place, . . . . .             | Philadelphia.        |
| Myers, Henry J., . . .              | 514 S. Twenty-fourth street, . . . . .   | Philadelphia.        |
| Myers, William S., . . .            | 22 W. Centre street, . . . . .           | Mahanoy City.        |
|                                     |                                          |                      |
| Nason, John B., . . . . .           | Townville, . . . . .                     | Crawford county.     |
| Neamand, Harry, . . . . .           | Quakertown, . . . . .                    | Bucks county.        |
| Neel, William, . . . . .            | Greensboro', . . . . .                   | Greene county.       |
| Neff, Alice, . . . . .              | 227½ S. George Street, . . . . .         | York.                |
| Neff, Harry G., . . . . .           | Masontown, . . . . .                     | Fayette county.      |
| Neibert, Adam, . . . . .            | West Newton, . . . . .                   | Westmoreland county. |
| Neville, Stanton H., . . .          | 388 Fifth avenue, . . . . .              | Pittsburgh.          |
| Neville, William, . . . . .         | Conshohocken, . . . . .                  | Montgomery county.   |
| Nichol, Albert S., . . . .          | 1401 Fairmount avenue, . . . . .         | Philadelphia.        |
| Nichols, John B., . . . .           | 1700 Wharton street, . . . . .           | Philadelphia.        |
| Nick, Mary E., . . . . .            | 2404 Peach street, . . . . .             | Erie.                |
| Nickum, E. George, . . . .          | 124 Main street, . . . . .               | Bethlehem.           |
| Nixon, Sherman W., . . . .          | East Stroudsburg, . . . . .              | Monroe county.       |
| Noon, Edward J., . . . . .          | 944 N. Second street, . . . . .          | Philadelphia.        |
| Nourse, Jennie, . . . . .           | 190 Centre avenue, . . . . .             | Pittsburgh.          |
| Nowlin, Thomas B., . . . .          | Tyrone, . . . . .                        | Blair county.        |
|                                     |                                          |                      |
| Odbert, James H., . . . . .         | 1422 Cambridge street, . . . . .         | Philadelphia.        |
| Oerter, Albert E., . . . . .        | 156 E. Main street, . . . . .            | Bethlehem.           |
| Ogden, Joseph D., . . . . .         | Latrobe, . . . . .                       | Westmoreland county. |
| Osborn, Daniel C., . . . . .        | 1739 Vine street, . . . . .              | Philadelphia.        |
| Ott, James E., . . . . .            | Bangor, . . . . .                        | Northampton county.  |
| Outen, Albert P., . . . . .         | 931 Marshall street, . . . . .           | Philadelphia.        |
| Overton, David W., . . . .          | Eldred, . . . . .                        | McKean county.       |
| Owen, Herbert W., . . . . .         | Toughkenamon, . . . . .                  | Chester county.      |
| Owings, Osmond T., . . . .          | 1133 S. Broad street, . . . . .          | Philadelphia.        |
|                                     |                                          |                      |
| Pagan, Edward F., . . . . .         | Wellsboro', . . . . .                    | Tioga county.        |
| Palmer, Charles W., . . . .         | Sixteenth and Lombard streets, . . . . . | Philadelphia.        |
| Palmer, Kate V., . . . . .          | 2801 N. Twelfth street, . . . . .        | Philadelphia.        |
| Parmer, E. Elmer, . . . . .         | Bristol, . . . . .                       | Bucks county.        |
| Parrish, Francis J., Jr., . . . . . | Gallitzin, . . . . .                     | Cambria county.      |
| Parton, George P., . . . . .        | 250 Mifflin avenue, . . . . .            | Scranton.            |
| Patchell, David, . . . . .          | 2217 Ellsworth street, . . . . .         | Philadelphia.        |
| Patterson, Robert A., . . . .       | Spring Creek, . . . . .                  | Warren county.       |
| Pauly, William F., . . . . .        | Transfer, . . . . .                      | Mercer county.       |
| Payne, Oscar W., . . . . .          | 1560 Dickson avenue, . . . . .           | Scranton.            |
| Pearce, Charles K., . . . . .       | Livermore, . . . . .                     | Westmoreland county. |

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| Pearce, Ernest C., . . .   | Livermore, . . . . .                       | Westmoreland county. |
| Pellett, Gurdon E., . .    | 800 Marion street, . . . . .               | Scranton.            |
| Penn, John Newton, . .     | Waynesboro', . . . . .                     | Greene county.       |
| Pentz, John F., . . .      | Easton, . . . . .                          | Northampton county.  |
| Perry, James C., . . .     | 4122 Haverford avenue, . . . . .           | Philadelphia.        |
| Pfeuffer, Willie, . . .    | 145 N. Tenth street, . . . . .             | Philadelphia.        |
| Phillips, Lehman B., . .   | 2601 N. Sixth street, . . . . .            | Philadelphia.        |
| Pickett, Charles T., . .   | New Hope, . . . . .                        | Bucks county.        |
| Pierce, Thomas J., . . .   | Frackville, . . . . .                      | Schuylkill county.   |
| Pike, Julius F., . . .     | 1901 N. Eleventh street, . . . . .         | Philadelphia.        |
| Pinchback, Pickney N., .   | 229 N. Twelfth street, . . . . .           | Philadelphia.        |
| Pine, Warren C., . . .     | 4552 Germantown avenue, . . . . .          | Philadelphia.        |
| Pittaway, Samuel G., . .   | 107 Fifth avenue, . . . . .                | Scranton.            |
| Plant, Edgar L., . . .     | 108 Fulton street, . . . . .               | Pittsburgh.          |
| Platt, George F., Jr., . . | Chambersburg, . . . . .                    | Franklin county.     |
| Prass, John N., . . .      | Twenty-ninth and Poplar streets, . . . . . | Philadelphia.        |
| Pratt, William H., . . .   | 114 N. Sixth street, . . . . .             | Camden, N. J.        |
| Pringle, James M., Jr., .  | Sixth and Poplar streets, . . . . .        | Philadelphia.        |
| Prior, Edwin A., . . .     | 1000 Hepburn street, . . . . .             | Williamsport.        |
| Pryor, Edwin E., . . .     | 201 Wyoming avenue, . . . . .              | Scranton.            |
| Poehm, Emil H., . . .      | 428 Webster avenue, . . . . .              | Pittsburgh.          |
| Pomeroy, Laura B., . . .   | Dushore, . . . . .                         | Sullivan county.     |
| Porter, Crawford W., . .   | 805 S. Twentieth street, . . . . .         | Philadelphia.        |
| Porter, Edmund C., . . .   | Waterford, . . . . .                       | Erie county.         |
| Porter, Stephen G., . . .  | 38 Charles Street, . . . . .               | Allegheny.           |
| Post, Francis E., . . .    | 331 N. Eleventh street, . . . . .          | Philadelphia.        |
| Poth, A. Herman, . . .     | 1322 Carson street, . . . . .              | Pittsburgh.          |
| Potter, Charles F., . . .  | Laceyville, . . . . .                      | Wyoming county.      |
| Potter, E. B., . . . .     | Girard, . . . . .                          | Erie county.         |
| Potts, George C., . . .    | 60 Fayette street, . . . . .               | Conshohocken.        |
| Powers, J. Arthur, . . .   | Orrstown, . . . . .                        | Franklin county.     |
| Pyfer, Howard F., . . .    | 238 W. King street, . . . . .              | Lancaster.           |
| Quay, Frank O., . . .      | 428 Arch street, . . . . .                 | Norristown.          |
| Quinn, J. Spurgeon, . . .  | DuBois, . . . . .                          | Clearfield county.   |
| Ramsey, Agnes S., . . .    | West Bridgewater, . . . . .                | Beaver county.       |
| Randall, Harry L., . . .   | 4927 Lancaster avenue, . . . . .           | Philadelphia.        |
| Randall, William F., . . . | Forksville, . . . . .                      | Sullivan county.     |
| Randolph, B. Alfred, . .   | 1828 Frankford avenue, . . . . .           | Philadelphia.        |
| Rankin, Harvey, . . .      | Elderton, . . . . .                        | Armstrong county.    |
| Rankin, James Lea, . . .   | Canonsburg, . . . . .                      | Washington county.   |
| Rathmell, Albert R., . .   | Brownsville, . . . . .                     | Fayette county.      |
| Raub, F. M. B., . . .      | 107 W. King street, . . . . .              | Lancaster.           |
| Raudenbush, Chas. H., .    | 530 N. Tenth street, . . . . .             | Philadelphia.        |
| Read, Ralph M., . . .      | Osceola Mills, . . . . .                   | Clearfield county.   |
| Reed, Raymond E., . . .    | 1539 N. Third street, . . . . .            | Harrisburg.          |
| Reed, George P., Jr., . .  | 66 N. Main street, . . . . .               | Washington.          |
| Reed, James M. P., . . .   | Beaver, . . . . .                          | Beaver county.       |
| Reed, Kenneth A., . . .    | Gallitzin, . . . . .                       | Cambria county.      |
| Reeder, Mrs. Mary E., . .  | Millersville, . . . . .                    | Lancaster county.    |
| Reese, A. B., . . . .      | Nanticoke, . . . . .                       | Luzerne county.      |
| Reese, Morgan, . . . .     | Plains, . . . . .                          | Luzerne county.      |
| Reese, Victor B., . . .    | Renovo, . . . . .                          | Clinton county.      |
| Reeser, William H., . . .  | 217 S. Fourth street, . . . . .            | Reading.             |
| Regan, Amandus F., . . .   | 520 S. Tenth street, . . . . .             | Philadelphia.        |
| Reh fuss, Charles, . . .   | Thirtieth and Lombard streets, . . . . .   | Philadelphia.        |



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|--------------------------|---------------------------------|----------------------|
| Reidenbach, Chas. F.,    | Fortieth street,                | Pittsburgh.          |
| Reidenbaugh, E. A.,      | 302 S. Prince street,           | Lancaster.           |
| Reif, Ernest,            | 1632 N. Third street,           | Philadelphia.        |
| Reig, Eugene G.,         | 209 East street,                | Warren.              |
| Reilly, Thomas B.,       | 920 S. Fifth street,            | Philadelphia.        |
| Reinhold, John,          | 1512 Peach street,              | Erie.                |
| Remington, Samuel J.,    | 1514 Arch street,               | Philadelphia.        |
| Reuss, William H.,       | 4501 Parrish street,            | Philadelphia.        |
| Reynolds, May,           | 1709 Norris street,             | Philadelphia.        |
| Rhoads, Harvey P.,       | Doylestown,                     | Bucks county.        |
| Rice, Robert G.,         | Rome,                           | Bradford county.     |
| Richards, D. Bruce,      | 1726 N. Eighteenth street,      | Philadelphia.        |
| Richards, George W.,     | Dravosburg,                     | Allegheny county.    |
| Richardson, James H.,    | 137 Congress street,            | Philadelphia.        |
| Rickard, John B.,        | Plymouth,                       | Luzerne county.      |
| Ridgway, Charles A.,     | Amber and Huntingdon streets,   | Philadelphia.        |
| Riedenauer, Fred'k P.,   | Thirtieth and Diamond streets,  | Philadelphia.        |
| Riegel, Samuel J.,       | 928 Walnut street,              | Lebanon.             |
| Riegraf, J. M.,          | 1028 Dakota street,             | Philadelphia.        |
| Rinker, Frank,           | Mount Airy,                     | Philadelphia.        |
| Rischfeter, Fred'k, Jr., | 64 Chestnut street,             | Allegheny.           |
| Rishell, John D.,        | 32 N. Ninth street,             | Philadelphia.        |
| Robarts, Mary E.,        | Phoenixville,                   | Chester county.      |
| Roberts, James W.,       | Luzerne,                        | Luzerne county.      |
| Roberts, Jos. Von C.,    | 4128 Market street,             | Philadelphia.        |
| Roberts, Reese C.,       | Airy and Swede streets,         | Norristown.          |
| Robinson, Zachary W.,    | 17 N. Centre street,            | Pottsville.          |
| Roehrig, Albert H.,      | 840 N. Nineteenth street,       | Philadelphia.        |
| Rogers, Harry W.,        | Elmer,                          | Salem county, N. J.  |
| Rolleston, Arthur R.,    | 6001 Vine street,               | Philadelphia.        |
| Roof, Frank H.,          | Titusville,                     | Crawford county.     |
| Root, Edward C.,         | Pittston,                       | Luzerne county.      |
| Roper, Harvey M.,        | 17 S. Forty-third street,       | Philadelphia.        |
| Rosenkrans, Cyrill D.,   | 1130 Spruce street,             | Philadelphia.        |
| Rosenkrans, J. Victor,   | Newton,                         | Sussex county, N. J. |
| Ross, George H.,         | 58 Main street,                 | Luzerne.             |
| Ross, Nathaniel,         | Nanticoke,                      | Luzerne county.      |
| Ross, Robert F.,         | Julius street,                  | Pittsburgh.          |
| Rosshberg, Gustave A.,   | 1236 S. Eighth street,          | Philadelphia.        |
| Roth, Joseph A.,         | 250 E. Ninth street,            | Erie.                |
| Roth, Samuel G. J.,      | 160 Girard avenue,              | Philadelphia.        |
| Roth, Theodore W.,       | Front and Dauphin streets,      | Philadelphia.        |
| Rounseville, A. G.,      | Coudersport,                    | Potter county.       |
| Rowe, Frederick M.,      | Columbus,                       | Warren county.       |
| Ruff, U. Gilbert,        | Twenty-fourth and Lombard sts., | Philadelphia.        |
| Ruhl, Harry F.,          | Phoenixville,                   | Chester county.      |
| Ruoff, William,          | 1318 N. Sixth street,           | Philadelphia.        |
| Rush, Louis,             | Ninth and Race streets,         | Philadelphia.        |
| Ryckman, Rachael A.,     | Boyer,                          | Westmoreland county. |
| Rynard, Charles W.,      | 562 Race street,                | Harrisburg.          |
| Sahm, Louis,             | 161 N. Sixteenth street,        | Philadelphia.        |
| Sample, J. Frank,        | Mechanicsburg,                  | Cumberland county.   |
| Sands, Ada B.,           | Tullytown,                      | Bucks county.        |
| Sapp, William E.,        | Dagus Mines,                    | Elk county.          |
| Savage, Thomas A.,       | 4856 Main street,               | Germantown.          |
| Sawhill, Edgar P.,       | 225 Fifth avenue,               | Pittsburgh.          |

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|-------------------------|---------------------------------|----------------------|
| Scarborough, Geo. W.,   | Ninth and Catharine streets,    | Philadelphia.        |
| Schaak, Milton F.,      | 1901 S. Seventh street,         | Philadelphia.        |
| Schaeter, Louis C.,     | 2401 E. York street,            | Philadelphia.        |
| Scheirer, Franklin B.,  | Hokendauqua,                    | Lehigh county.       |
| Scheirer, Victor D.,    | Second and Hamilton streets,    | Allentown.           |
| Scheller, Wilhelm J.,   | Fifth and Jefferson streets,    | Philadelphia.        |
| Scheller, William C.,   | 110 W. Eighteenth street,       | Erie.                |
| Schen, William J.,      | Washington,                     | Washington county.   |
| Scherer, Bernhard F.,   | 3844 Haverford avenue,          | Philadelphia.        |
| Schilling, Frank,       | 1511 Mervine street,            | Philadelphia.        |
| Schilling, Paul C.,     | 64 Chestnut street,             | Allegheny.           |
| Schlabach, Edward,      | 437 Northampton street,         | Easton.              |
| Schlegel, Emil,         | 501 S. Seventh street,          | Philadelphia.        |
| Schleiff, William, Jr., | 3202 Sansom street,             | Philadelphia.        |
| Schloer, Charles A.,    | 1500 S. Ninth street,           | Philadelphia.        |
| Schmehl, Irvin S.,      | 531 Penn street,                | Reading.             |
| Schoff, John J.,        | 1028 Race street,               | Philadelphia.        |
| Schotte, Karl B.,       | Kittanning,                     | Armstrong county.    |
| Schraedley, Fred'k A.,  | 924 Spruce street,              | Philadelphia.        |
| Scott, George C.,       | Eighth and Diamond streets,     | Philadelphia.        |
| Scott, John, Jr.,       | 3728 Market street,             | Philadelphia.        |
| Scott, Robert B.,       | 2401 E. Huntingdon street,      | Philadelphia.        |
| Sechler, Harman M.,     | 201 Mill street,                | Danville.            |
| Seebold, John E.,       | Millersburg,                    | Dauphin county.      |
| Seeley, Silas M.,       | Milford,                        | Pike county.         |
| Seiffert, John H.,      | York,                           | York county.         |
| Seigfried, Harvey M.,   | 956 Walnut street,              | Allentown.           |
| Seiss, Anderson E.,     | Littlestown,                    | Adams county.        |
| Seler, Charles A.,      | 232 N. Ninth street,            | Allentown.           |
| Seltzer, Charles Jacob, | Coatesville,                    | Chester county.      |
| Senft, Elmer E.,        | 537 E. Chestnut street,         | Lancaster.           |
| Seville, David W.,      | Bellevue street,                | Allegheny.           |
| Shade, George J.,       | 64 N. Fourth street,            | Philadelphia.        |
| Shafer, Erwin C.,       | Montoursville,                  | Lycoming county.     |
| Shaffer, Samuel A.,     | Lock Haven,                     | Clinton county.      |
| Shalleron, William G.,  | Tenth and Reed streets,         | Philadelphia.        |
| Shaner, John W.,        | Greensburg,                     | Westmoreland county. |
| Shannon, James D.,      | Youngsville,                    | Warren county.       |
| Shapira, Isaac,         | Plymouth,                       | Luzerne county.      |
| Sheehan, John P.,       | Eleventh and Diamond streets,   | Philadelphia.        |
| Shiffer, Bertie B.,     | Plains,                         | Luzerne county.      |
| Shoemaker, Elmer W.,    | Lost Creek,                     | Schuylkill county.   |
| Shreve, Joseph F.,      | Eleventh and Master streets,    | Philadelphia.        |
| Shull, Carl W.,         | 742 Christian street,           | Philadelphia.        |
| Shull, Alexander B.,    | 3928 Market street,             | Philadelphia.        |
| Shultz, John W.,        | 521 W. Lemon street,            | Lancaster.           |
| Shuman, Calvin B.,      | 154 N. Eleventh street,         | Philadelphia.        |
| Shumaker, Joseph C.,    | Beaver,                         | Beaver county.       |
| Sibson, William H.,     | 806 Church street,              | Germantown.          |
| Siebert, Charles W.,    | 64 Chestnut street,             | Allegheny.           |
| Siegfried, Howard J.,   | Tenth street and Fairmount av., | Philadelphia.        |
| Siggins, Frank M.,      | Youngsville,                    | Warren county.       |
| Siglinger, Charles,     | 2328 E. Norris street,          | Philadelphia.        |
| Silvard, J. K.,         | New Albany,                     | Bradford county.     |
| Simmons, Richard H.,    | 30 S. Shamokin street,          | Shamokin.            |
| Simonis, Otto, Jr.,     | 818 Newmarket street,           | Philadelphia.        |
| Simons, Harry F.,       | 418 Gerker street,              | Philadelphia.        |

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|-------------------------|-----------------------------------|---------------------|
| Simpson, Charles R.,    | 1613 Eleventh avenue,             | Altoona.            |
| Singer, Robert L.,      | Plainfield,                       | Union county, N. J. |
| Skeath, George W.,      | 1621 Vine street,                 | Philadelphia.       |
| Slaughter, Charles H.,  | Frankford,                        | Philadelphia.       |
| Slick, Ross M.,         | 732 S. Nineteenth street,         | Philadelphia.       |
| Sloan, A. McClure,      | 311 W. Seventh street,            | Erie.               |
| Slough, Lizzie O.,      | 845 Hamilton street,              | Allentown.          |
| Slough, Minnie H. A.,   | 845 Hamilton street,              | Allentown.          |
| Smart, Charles O.,      | 28 Anderson street,               | Allegheny.          |
| Smedley, Albert W.,     | 900 Lombard street,               | Philadelphia.       |
| Smink, Alfred H.,       | 33 Market street,                 | Shamokin.           |
| Smink, Henry G.,        | 33 Market street,                 | Shamokin.           |
| Smink, Robert W.,       | 33 Market street,                 | Shamokin.           |
| Smith, Allen H.,        | Thirteenth and Jefferson streets, | Philadelphia.       |
| Smith, Charles O.,      | Hartleton,                        | Union county.       |
| Smith, Clark A.,        | Reynoldton,                       | Allegheny county.   |
| Smith, David W.,        | Washington,                       | Washington county.  |
| Smith, Frank B.,        | 1851 Franklin Place,              | Harrisburg.         |
| Smith, Frank H.,        | Quakertown,                       | Bucks county.       |
| Smith, Frank H.,        | Wellsboro',                       | Tioga county.       |
| Smith, Frederick W.,    | 3928 Market street,               | Philadelphia.       |
| Smith, George A.,       | Nazareth,                         | Northampton county. |
| Smith, Harry A.,        | Second and Dauphin streets,       | Philadelphia.       |
| Smith, Harry C.,        | 1254 Liberty street,              | Franklin.           |
| Smith, Hays,            | 4067 Penn avenue,                 | Pittsburgh.         |
| Smith, H. Lyons,        | Pittston,                         | Luzerne county.     |
| Smith, John B.,         | 4740 Main street,                 | Germantown.         |
| Smith, L. Worden,       | 1101 Pennsylvania avenue,         | Harrisburg.         |
| Smith, M. N.,           | Reynoldton,                       | Allegheny county.   |
| Smith, Robert U.,       | 218 S. Duke street,               | York.               |
| Smith, Walter V.,       | 2041 Mt. Vernon street,           | Philadelphia.       |
| Smucker, Milton C.,     | Thirteenth and Green streets,     | Philadelphia.       |
| Smurl, William E.,      | Parsons,                          | Luzerne county.     |
| Snyder, Howard G.,      | 799 S. Second street,             | Philadelphia.       |
| Snyder, Ira M.,         | Lykens,                           | Dauphin county.     |
| Snyder, William H.,     | Thirteenth and Market streets,    | Harrisburg.         |
| Snyder, William L.,     | Media,                            | Delaware county.    |
| Solliday, William W.,   | 631 Mauch Chunk street,           | Easton.             |
| Spang, Charles A.,      | 213 Rebecca street,               | Allegheny.          |
| Spangler, Fred'k A.,    | 124 S. Penn street,               | York.               |
| Spayd, Henry E.,        | 124 Public square,                | Wilkes-Barre.       |
| Speer, Edgar L.,        | 4060 Chestnut street,             | Philadelphia.       |
| Spragle, Elmer,         | 1367 Frankford avenue,            | Philadelphia.       |
| Springer, Clarence J.,  | Sewickley,                        | Allegheny county.   |
| Stacks, Charles M.,     | Steelton,                         | Dauphin county.     |
| Staley, Maud E.,        | Tarentum,                         | Allegheny county.   |
| Stanger, Lawrence A.,   | Frankford,                        | Philadelphia.       |
| Stangle, Paul L.,       | Judson place and Berks street,    | Philadelphia.       |
| Stark, Harry J.,        | Tunkhannock,                      | Wyoming county.     |
| Stedem, Lawrence S. A., | 1351 N. Eleventh street,          | Philadelphia.       |
| Steel, Harry E.,        | 218 Mifflin street,               | Huntingdon.         |
| Steele, George E.,      | 1113 Vine street,                 | Philadelphia.       |
| Stein, Edward T. N.,    | Chester,                          | Delaware county.    |
| Steiner, Ephraim H.,    | 812 Berwick street,               | Easton.             |
| Steitz, Louis H.,       | 157 Penn avenue,                  | Allegheny.          |
| Steltzer, Nathan S.,    | 242 Chestnut street,              | Philadelphia.       |
| Stern, Harvey N.,       | 727 Hamilton street,              | Allentown.          |

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| Stern, Lee, . . . . .         | Uniontown, . . . . .                 | Fayette county.      |
| Stewart, Francis L., . . .    | Murrysville, . . . . .               | Westmoreland county. |
| Stimmel, Walter P., . . .     | Sixth and McKean streets, . . .      | Philadelphia.        |
| Stinmetz, George C., . . .    | 212 Holland street, . . . . .        | Erie.                |
| Stirling, David C., . . . .   | 3339 Woodland avenue, . . . . .      | Philadelphia.        |
| Stoeber, Harry V., . . . .    | Chester, . . . . .                   | Delaware county.     |
| Stoke, George W., . . . . .   | Reynoldsville, . . . . .             | Jefferson county.    |
| Stoner, M. W., . . . . .      | 4823 Lancaster avenue, . . . . .     | Philadelphia.        |
| Stouch, Herbert J., . . . .   | 1101 Diamond street, . . . . .       | Philadelphia.        |
| Stout, Charles E., . . . . .  | 123 Broadway, . . . . .              | Milton.              |
| Stout, Oliver A., . . . . .   | Thirteenth and Green streets, . . .  | Philadelphia.        |
| Stovey, J. Chester, . . . .   | Phoenixville, . . . . .              | Chester county.      |
| Strode, William A., . . . .   | Eighth and Walnut streets, . . .     | Philadelphia.        |
| Stroh, George D., . . . . .   | 205 N. Main street, . . . . .        | Pittston.            |
| Strohecker, Samuel M., . . .  | Reading, . . . . .                   | Berks county.        |
| Strong, Mary, . . . . .       | Fifteenth st. and Eleventh av., . .  | Altoona.             |
| Stropp, George G., . . . . .  | Greensburg, . . . . .                | Westmoreland county. |
| Stroud, Arthur H., . . . . .  | Chestnut Hill, . . . . .             | Philadelphia.        |
| Stroud, John G., . . . . .    | 800 Walnut street, . . . . .         | Philadelphia.        |
| Strouse, Theodore H., . . .   | 1946 Diamond street, . . . . .       | Philadelphia.        |
| Strunz, Christian E., . . . . | Shiloh and Sycamore streets, . . .   | Pittsburgh.          |
| Sullivan, Charles E., . . . . | Waynesboro', . . . . .               | Franklin county.     |
| Sultzbach, Harry M., . . . .  | 667 N. Fifteenth street, . . . . .   | Philadelphia.        |
| Sutton, Mrs. Josie, . . . . . | Mendon, . . . . .                    | Westmoreland county. |
| Sutton, Samuel, . . . . .     | 321 S. Main street, . . . . .        | Wilkes-Barre.        |
| Swainbank, Harry H., . . . .  | Sixth and Vine streets, . . . . .    | Philadelphia.        |
| Swartley, Harry C., . . . . . | 1801 Chestnut street, . . . . .      | Philadelphia.        |
| Sweeley, J. E., . . . . .     | Williamsport, . . . . .              | Lycoming county.     |
| Sweeney, Joseph H., . . . .   | Twenty-first and Reed streets, . . . | Philadelphia.        |
|                               |                                      |                      |
| Tafel, Adolph L., . . . . .   | 1011 Arch street, . . . . .          | Philadelphia.        |
| Taggart, Carson G., . . . .   | 600 DeKalb street, . . . . .         | Norristown.          |
| Taggart, Howard M., . . . .   | 2011 Fairmount avenue, . . . . .     | Philadelphia.        |
| Tait, R. W., . . . . .        | Susquehanna, . . . . .               | Susquehanna county.  |
| Taylor, Agnes S., . . . . .   | 257 Scott street, . . . . .          | Wilkes-Barre.        |
| Taylor, Bessie E., . . . . .  | Lexington av. and Tenth st., . . .   | Altoona.             |
| Taylor, Harry B., . . . . .   | Lexington av. and Tenth st., . . .   | Altoona.             |
| Taylor, James, . . . . .      | Derry Station, . . . . .             | Westmoreland county. |
| Teeple, Harry S., . . . . .   | Sixth and Vine streets, . . . . .    | Philadelphia.        |
| Terppe, Julia, . . . . .      | 510 Cedar avenue, . . . . .          | Scranton.            |
| Terry, Ione E., . . . . .     | 1601 Passyunk avenue, . . . . .      | Philadelphia.        |
| Test, Daniel D., . . . . .    | 1201 N. Twelfth street, . . . . .    | Philadelphia.        |
| Thomas, John L., . . . . .    | 905 Walnut street, . . . . .         | McKeesport.          |
| Thomas, Frank B., . . . . .   | Derry Station, . . . . .             | Westmoreland county. |
| Thomas, William P., . . . .   | Tenth and Vine streets, . . . . .    | Philadelphia.        |
| Thompson, E. Frank, . . . .   | 8 Diamond street, . . . . .          | Titusville.          |
| Thompson, Frank F., . . . .   | 1410 Chestnut street, . . . . .      | Philadelphia.        |
| Thompson, George N., . . . .  | 3742 Market street, . . . . .        | Philadelphia.        |
| Thompson, Harley S., . . . .  | Union City, . . . . .                | Erie county.         |
| Thompson, O. J., . . . . .    | 220 N. Sixth street, . . . . .       | Reading.             |
| Thompson, Robert D., . . . .  | 45 Sixth street, . . . . .           | Pittsburgh.          |
| Thorn, Paul D., . . . . .     | Morrisdale Mines, . . . . .          | Clearfield county.   |
| Tiffany, L. Elbert, . . . . . | Hallstead, . . . . .                 | Susquehanna county.  |
| Tiffany, Minnie E., . . . .   | Pleasant Mount, . . . . .            | Wayne county.        |
| Tinsman, John F., . . . . .   | 1900 Green street, . . . . .         | Philadelphia.        |
| Tower, Theodore S., . . . .   | 676 Fifth avenue, . . . . .          | Pittsburgh.          |
| Tragesser, Edward C., . . . . | 538 E. Chestnut street, . . . . .    | Lancaster.           |



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| Troop, William W., . . .   | 258 S. Ninth street, . . . . .        | Reading.             |
| Troutman, George F., . .   | Glen Riddle, . . . . .                | Delaware county.     |
| Troxell, William E., . .   | Gallitzin, . . . . .                  | Cambria county.      |
| Turner, Hebert W., . . .   | 701 Chestnut avenue, . . . . .        | Altoona.             |
| Tyler, George C., . . .    | Bristol, . . . . .                    | Bucks county.        |
| Ulsh, William H., . . .    | Selinsgrove, . . . . .                | Snyder county.       |
| Urban, James C., . . .     | 442 S. Queen street, . . . . .        | Lancaster.           |
| Utech, Philip H., . . .    | 912 Water street, . . . . .           | Meadville.           |
| Van Buskirk, Thos. F., . . | 822 W. Lehigh avenue, . . . . .       | Philadelphia.        |
| Van Cleve, Wm. C., . . .   | Gettysburg, . . . . .                 | Adams county.        |
| Van Dyke, Alfred N., . .   | 1701 Summer street, . . . . .         | Philadelphia.        |
| Van Horn, Elijah O., . .   | Hatboro', . . . . .                   | Montgomery county.   |
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| Verstine, Mall, . . . .    | Brookville, . . . . .                 | Jefferson county.    |
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| Walker, James R. H., . .   | Delmont, . . . . .                    | Westmoreland county. |
| Walker, John M., . . .     | 1 Morris street, . . . . .            | Johnstown.           |
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| Waters, John B., . . .     | Catawissa, . . . . .                  | Columbia county.     |
| Watkins, Charles J., . .   | Olyphant, . . . . .                   | Lackawanna county.   |
| Watson, David B., . . .    | Birmingham avenue, . . . . .          | Pittsburgh.          |
| Weaver, Charles H., . .    | Richlandtown, . . . . .               | Bucks county.        |
| Weaver, Elias H., . . .    | Richlandtown, . . . . .               | Bucks county.        |
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| Weber, Herman, . . . .     | 1047 S. Sixth street, . . . . .       | Philadelphia.        |
| Weber, William, . . . .    | Sixth street and Washington av., . .  | Philadelphia.        |
| Weishaar, Henry P., . .    | 234 Ohio street, . . . . .            | Allegheny.           |
| Weisinger, A. J., Jr., . . | Mansfield Valley, . . . . .           | Allegheny county.    |
| Weiss, Frederick A., . .   | Thirteenth and Pine streets, . . . .  | Philadelphia.        |
| Welch, Frank J., . . .     | Shingle House, . . . . .              | Potter county.       |
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| Wellman, A. H., . . . .    | Cambridgeboro', . . . . .             | Crawford county.     |
| Westcott, Frank, . . .     | Media, . . . . .                      | Delaware county.     |
| Westgate, Benj. H., . .    | Canton, . . . . .                     | Bradford county.     |
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| White, Jonas S., . . .     | 641 Arch street, . . . . .            | Philadelphia.        |
| White, Preston B., . . .   | 4060 Chestnut street, . . . . .       | Philadelphia.        |

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| White, Robert W., . . .  | Chambersburg, . . . . .           | Franklin county.       |
| White, William N., . .   | Sixteenth and Tasker streets, . . | Philadelphia.          |
| Whitfield, James M., .   | Julianna, . . . . .               | Bedford county.        |
| Whitling, Willis, . . .  | 29 Fifth avenue, . . . . .        | Pittsburgh.            |
| Whitman, Frederick T.,   | Canton, . . . . .                 | Bradford county.       |
| Widdup, Charles, . . .   | Dunbar, . . . . .                 | Fayette county.        |
| Wilbert, Martin I., . .  | 600 N. Eleventh street, . . . . . | Philadelphia.          |
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| Williams, Clarence E., . | 1315 Moore street, . . . . .      | Philadelphia.          |
| Williams, John H., . .   | Marshall and Astor streets, . . . | Norristown.            |
| Willis, Charles A., . .  | Mansfield Valley, . . . . .       | Allegheny county.      |
| Wills, India S., . . .   | Richfield, . . . . .              | Juniata county.        |
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| Wilson, J. C., . . . .   | Mercersburg, . . . . .            | Franklin county.       |
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| Wishart, John E., . . .  | 124 Thompson street, . . . . .    | Philadelphia.          |
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| Wittel, John K., . . .   | Mount Joy, . . . . .              | Lancaster county.      |
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| Wolfenden, Benj. F., .   | 500 S. Ninth street, . . . . .    | Philadelphia.          |
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| Wollmuth, Richard J.,    | 71 Broad street, . . . . .        | Bethlehem.             |
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| Yohn, Charles R., . . .  | Twelfth st. and Fairmount av., .  | Philadelphia.          |
| Yost, Harvey B., . . .   | 24 S. Main street, . . . . .      | Bethlehem.             |
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